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\* Illustrated.

THE demand from new subscribers for back numbers of the INDIA RUBBER WORLD having exhausted our reserves for that purpose, the publishers will be glad to pay 50 cents each for copies of the February, 1890, edition.

## An Inquiry from Switzerland.

THE mail brings us from a Zurich rubber dealer some inquiries in regard to American exports of rubber goods, which, fortunately, it is possible to answer with credit to our own manufacturers. His letter follows:

EDITOR INDIA RUBBER WORLD: From the latest statistics I see that the rubber exports from the United States for the nine months ending with September were:

1889—Boots and shoes.....	\$ 89,000
All other rubber goods.....	564,000
1890—Boots and shoes.....	83,000
All other rubber goods.....	795,000

I should like to know to what countries and in what proportions to each of the principal ones these exports go. I suppose that most of the exports are going to Canada. Am I mistaken in this?

I am, dear sir, yours truly,

Zurich, 90 Bahnhofstrasse, 19 December, 1890.

H. SPECKER.

For the most satisfactory data available for answering these inquiries we refer our correspondent to the annual report of the Chief of the Bureau of Statistics, at Washington, on our foreign commerce for the fiscal year ending June 30, 1889, the volume for the last year not yet having reached us. The values of exports of "Manufactures of India Rubber and Gutta Percha" are there given as follows:

Countries to which Exported.	Boots and Shoes.	All other Goods.
Great Britain and Ireland.....	\$14,639	\$248,816
British North America.....	42,902	129,931
British Australia.....	4,684	37,987
Other British Possessions.....	1,063	5,902
Germany.....	2,227	77,618
Mexico.....	2,401	42,899
Central America.....	942	24,522
South America.....	1,359	54,849
France.....	745	39,932
Cuba.....	90	27,714
Hawaiian Islands.....	297	19,023
Belgium.....	—	2,973
Italy.....	—	4,422
Netherlands.....	977	7,299
Sweden and Norway.....	6	3,643
Japan.....	4,502	7,794
Porto Rico.....	4	2,700
All other countries.....	9,567	17,319
Total.....	\$86,405	\$745,343

England alone took of the goods embraced in this table \$189,559 of articles other than boots and shoes. Canada proper took \$8,911 worth of boots and shoes and \$82,932 worth of other rubber goods. But doubtless the table will show for itself what is desired by our Zurich correspondent. The figures for the calendar year of 1890 were on a much larger scale, the exports of rubber goods other than boots and shoes being known to have exceeded \$1,500,000 in value, but we are not yet able to state to what countries the shipments were made. It is proper to state here that no very exact statistics are kept of our exports beyond the borders of Canada and Mexico. Since no export duties

are charged it seems not to have occurred to the Government at Washington to be worth while to expend money to keep an account of our sales in these directions. Of some classes of exports it is estimated that the unenumerated exports to Mexico and Canada largely exceed in value those which happen to catch the eyes of the customs officials.

Lately there have been large shipments of American rubber belting to Japan, whose government is actively engaged in the development of new industries. For instance, six paper mills have been established within a short time in that kingdom, under the supervision of young Japanese trained in paper making at Holyoke, Mass. All the machinery used is of the very best American manufacture, and the belting used is of rubber, the six mills having been supplied by one firm of rubber manufacturers here. This is but a single illustration of the new channels for the sale of American rubber goods. Extensive mining operations in Mexico have furnished a market for hose and belting, the latter being used both for the transmission of power and for making "elevators"—with the addition of metal buckets—for raising ores from deep pits. One of our companies has put up a press recently with the help of which it is able to turn out rubber belting eighty inches wide and of any length desired, the whole being of even thickness and pliability throughout.

The sales of American rubber goods in Germany are also reported on the increase, especially of rubber belting for the numerous sulphite factories and paper mills which have come into existence in that country of late. The shipments of mechanical rubber goods of all kinds to England are on the increase, a fact which our manufacturers are disposed to attribute to the superiority of their product to the articles of the same class manufactured across the ocean.

#### Commended to the British Government.

THE consideration of the British Government has been called, by the *India Rubber Journal* (London), to the action of the Government at Washington in specially instructing American consuls throughout the world to send home detailed reports relative to crude rubber and also rubber manufactures. Reference is made by our contemporary to the exhaustive official enquiry set on foot at the suggestion of THE INDIA RUBBER WORLD, the results of which promise to attract widespread attention. Already the London journal announces that it "shall look forward with great interest to the amount of interesting information which will no doubt be the result of these enquiries." From the same source comes the complaint that the British consular reports "are too often vague and scrappy for want of the consuls being kept sufficiently informed as to the exact details respecting which information should be furnished." No doubt this has also marked the work of some of the American consuls, many of whom have received their appointments as a reward due for political service rather than with a view to their fitness for advancing the interests of American commerce. But the charac-

ter of our consular service has been improving of late years, and so far as the India rubber enquiry is concerned, the consuls will have no excuse for failure, so explicit have been the interrogatories propounded through the Secretary of State.

The importance of governmental attention to the rubber interests—not in the way of interference in industrial matters, but in the diffusion of information which could in no other manner be procured so completely or so accurately—is recognized by our London contemporary, which proceeds to remark: "The present aspect of the rubber trade—an increasing demand for raw material, and a threatened decrease in supply—imperatively calls for the fullest investigation of the whole subject." The journal singles out as especially pointed questions addressed to the United States consuls:

18. How are American goods regarded in comparison with those of other countries?

19. What suggestions would you offer for the benefit of American rubber manufacturers desirous of extending their trade into your district?

In view of the rapid growth of the rubber manufacturing interests in America, placing this country in advance of all the world, it will not be surprising if the answers to these questions should be regarded with deep interest by all our foreign competitors. If American manufacturers ever become able to satisfy the constantly growing home demand for rubber goods, other countries may well look to their laurels in regard to the supplying of those parts of the world where rubber manufactories do not exist.

#### Rubber Report From the Bahamas.

BY CONSUL THOMAS J. McLAIN.

THE first of the Consular Reports on India rubber, ordered by the Government at Washington at the instance of THE INDIA RUBBER WORLD, is that prepared by Consul Thomas J. McLain, Consul to the Bahamas, who reported from Nassau, under date of October 16 last:

*The Rubber Tree.*—Caoutchouc, or India rubber, cannot properly be called a product of this district, though a few trees grow on this island from which the juice might be extracted. These trees, commonly called the rubber tree, have the botanical name of *Siphonia elastica*, and are used only for shade and ornamental purposes. No effort, so far as I can learn, has ever been made to cultivate the trees with a view to gathering caoutchouc; and whether such culture could be made with profit I am unable to say, nor can I find any person here competent to give an intelligent opinion upon the subject. The tree grows with apparent vigor; but whether, in this sterile and rocky soil, it would yield juice in paying quantities is problematical.

*Manufactures of Rubber.*—There are no importations of crude rubber into this colony, and, as there is no local production of caoutchouc, it naturally follows that no rubber goods are made in this district.

*The Trade in Rubber Goods.*—The sale of rubber goods in this colony is only nominal. The amount imported cannot be exactly stated, because such articles are not entered separately at the custom-house; but, after careful inquiry among dealers, I

am confident that the total value of such goods imported will not exceed \$500 per annum. They consist of rubber overshoes, rubber-soled tennis shoes, overalls, water-proofs, sewing machine rings, combs, syringes, toys, etc.

The import duty on rubber goods is 20 per cent. ad valorem. Nearly everything in this line is imported from the United States through commission houses in New York.

*Can Trade be Increased?*—I cannot say anything encouraging in this direction. Rubber goods are not in much favor in this market, and customers for them are few indeed. The goods do not keep well. The hot, damp climate injures them quickly and seriously. They speedily become sticky and lose their strength. A merchant showed me a consignment of overalls, in stock less than three months, which had so melted and run together as to be unsalable and a dead loss to him.

In view of this condition of affairs, I cannot advise our manufacturers of rubber goods to spend their time, labor and money in an effort to enlarge their trade with this colony, for I do not believe any good results can be accomplished.

#### The Business of 1890.

**M**R. J. H. CHEEVER, of the New York Belting and Packing Co., in speaking of the trade of 1890, said :

"The business for the past year has been good, and has increased considerably in the mechanical line, and I judge from the reports that it has been good in all branches. Factories have all run full, and in fact everything has gone along in good shape.

"The Okonite Company during the year has organized itself into a large international company, and is doing a very good business.

"The demand for insulated wire keeps up very well. We do not notice any diminishment in the needs of electric light companies, as has been stated would probably ensue from the recent financial episode."

Mr. F. M. Shepard, of the Goodyear Rubber Co., said :

"It is early to form an opinion of what the results of last year in net profits will be. Sales have been very good in volume, but much depends upon what the manufacturers had to pay for rubber. The prices of boots and shoes have not kept in line with the advance of the gum, and the year has proven to be a speculative one. In the mechanical lines the situation has been better, and we have been able to secure some advance in prices, more in accordance with the high prices of the crude material, but in boots and shoes orders taken early in the year for a later delivery could not have been profitable if the manufacturer had not secured his rubber in good season.

"There has been nothing to complain of in the way of collections, and I imagine there have been very few losses from this source.

"The weather has been very favorable for a good business, especially in the last month of the year. In mackintoshes there is an increased demand for double texture styles, and so far as we are concerned we are selling them at the old prices, making no advance on account of the tariff bill, and we propose to go right along in this way.

"Stocks of all sorts are light, and all matters connected with the trade seem to be in a healthy condition."

Samuel F. Randolph, President Commonwealth Rubber Co., New York, said :

"The past year was a good one for all in the mechanical rubber goods business, and the results will probably be satisfactory. The demand for better goods is a growing one, and people seem willing to pay good prices for a durable article. We have three men out all the time, and there seems to be trade enough to keep them busy."

Mr. A. Spadone, of the Gutta Percha and Rubber Manufacturing Co., said :

"We did a very good business last year, in fact the best we ever did. If we could compromise on that business for the next ten years, we would be abundantly satisfied. Prices were not so good in the first half of the year as they ought to have been, on account of the high range of values in raw rubber, but after that, they were better, and more in accordance with the cost of the raw material. Fortunately, however, we supplied ourselves with the crude gum when prices were low, and, of course, reaped whatever benefits accrued from that policy. Collections have been good throughout the year, with perhaps a variation for the worse in the past sixty days; still they could be called satisfactory during that time. Our customers very generally have paid their bills freely, and we have made very few bad accounts.

"Our fire-hose sales have increased largely during the year. Our factory has run full all the time, not missing a single day, and now we feel compelled to increase our force by one-sixth. There is a good demand constantly growing for better qualities, and the competition is now in the direction of excellence and not in cheapness. Our stock of manufactured goods is reduced to perhaps a minimum, there being no congestion in any line. We have a good stock of rubber on hand at lower prices than now ruling, and are inclined to believe in the market at these prices; at least we are picking it up now very freely."

Mr. J. D. Vermule, President of the Goodyear India Rubber Glove Co. :

"Our business for 1890 has been, in volume, fully as large as in the previous year, but the profits cannot be named at present. There has been a good sale of Mackintoshes and cloth-surfaced goods, with fairly satisfactory prices, as well as in druggist sundries. The country is in good condition, and the outlook can be called encouraging."

Mr. Geo. F. Hodgman, of the Hodgman Rubber Co., said :

The volume of business of 1890 was larger in the aggregate than in the previous year. This state of the trade embraces the first ten months, or until the first of November, when the financial distress began, after which date the volume was about equal to that of the corresponding months in the previous year. Prices, however, did not rule high enough to fully justify on an average the in-

creased cost of the crude material, which was subject to unusual speculation; consequently, profits were enhanced, or curtailed, in the proportion of an ability to foretell the rubber market from time to time. This, of course, is a difficult matter to do, and the prices obtained for manufactured goods did not yield a sufficient profit to warrant the risk. Manufacturers were liable to an actual loss, which, probably in some cases, was the result of the season's operations.

We note with gratification a demand for a better quality of goods, and in some sections this is more pronounced than in others. Once it was that ten dollars was considered an extravagant price for a mackintosh, now it is considered in comparison an ordinary garment, and a thirty dollar coat has taken its place in the scale, while higher figures than those last mentioned are often obtained. In the matter of this demand for a better grade of goods, the South hardly keeps pace with the East, and the far West and the Northwest have not been educated up to the standard of the territory east of Chicago. The Pacific coast, however, is calling for an excellent grade of goods.

Business around New York has been very good, and that of New England came in the same category. Collections were good throughout the year, and during the financial stringency we were a little surprised to see how well they came in. Some small failures have occurred, but not more than the average, and this fact, in contrast with that of other lines of business, reflects probably the soundness of the trade, and betokens, we hope, a bright outlook for the coming season.

C. A. Place, President of the Metropolitan Rubber Co. said :

"During the past year, business was very good, but prices were not so high as they ought to have been, considering the increased cost of rubber. This gave us a very small margin of profit. Rubber averaged twenty per cent. higher, while the prices obtained for clothing were very little more. Mechanical goods turned out better, there being a fair advance in them. The holiday trade was very fair. Our Boston store did a good trade in everything, and as a whole its holiday business was excellent. Western trade has been only ordinary, the weather in that section not being such as it was East. I am not inclined to view matters in a pessimistic way, and believe that we have a good outlook in 1891."

Mr. J. W. Godfrey, of the New York Insulated Wire Co., said :

"All manufacturers of insulated wire have had a very satisfactory year, especially in high grade goods. Experience has taught that cheap insulation is expensive. The additional first cost of a high grade wire is really the best sort of an investment.

"We are glad to see one improvement obtaining favor with architects, which is that interior construction shall be so planned that access to wires at every point can be readily obtained. The time is coming when large buildings will need more lights, and electrical laws call in such cases, for an increase in wire conductivity, manifestly this is ob-

tained in the best way by enlarging the cross section of the wire. As buildings have been constructed, this is well-nigh impossible, and the job is botched by running additional conductors as best they can be. Architects are now beginning to channel floors, corners, and walls for wire, concealing them in an artistic manner. This is one of the progressive steps that has marked the wire business in 1890. Collections have been good. Some of the inflated light companies have to retrench a little, but the demand is now up to the average, and that of the power companies is constantly increasing."

Mr. J. Edwin Davis, of the Boston Woven Hose Company, said :

"Our company did thirty per cent. more business in the year just closed than in 1889. The failures were no more than the average, about one-quarter of one per cent. on sales. The recent financial panic was not felt other than in somewhat slower collections. People have not bought any less."

"Our sales the last two months, have been very much more than for the corresponding two months of a year ago. We have just added a wing to our factory, which will be used for drying rubber; and we have otherwise increased our facilities by putting in an additional engine. Two hundred hands are now employed, and more goods have been manufactured in the last month than in any previous month in the history of the company.

"I look for an easier money market the coming year, and in regard to the reports from Brazil, rubber is rather too difficult an article to 'corner' with entire success."

#### Change of Trade Mark.

THE following circular is being distributed by the NEW YORK BELTING AND PACKING COMPANY, 15 Park Row, New York City.

"We have found it necessary to change the Trade Mark of our Diamond grade of goods, and hereafter will use the following, which we have secured, and after the disposal of goods bearing the old Trade Mark all



genuine "Diamond" grade of goods will bear the DOUBLE DIAMOND BRAND.

Our goods have been giving such great satisfaction, that some manufacturers of rubber goods have found it profitable to use a Diamond brand in order to palm off an inferior quality.

Our "Fine Pará" and "Carbon" brands will not be changed, as they are also secured.

Hoping to be favored with your further orders,

Yours very truly,

NEW YORK BELTING AND PACKING COMPANY.

John H. Cheever, Treasurer.

## New Goods in the Market.

## To MANUFACTURERS AND PATENTEES :

*It is our aim to embody in this department descriptions and illustrations of all the latest novelties introduced in the market, to the end that jobbers, retailers and buyers of rubber goods generally may look here for information as to everything new that each month or season brings forth. Manufacturers and patentees are, therefore, most cordially invited to co-operate with us in making the department as complete and attractive as possible—the distinct understanding being that no charge whatsoever, either direct or indirect, will be made for these publications. Our reward will come through giving our readers valuable information; and that will be reward enough if manufacturers but give the information freely and in all cases at the earliest practicable moment.*

*In forwarding descriptions of new goods, be careful to write on one side of the paper only; be brief, but always write enough to give the buyer a clear idea of the article you offer; give your full address, plainly written; and in all cases send a small illustration or wood cut if you have one.*

THE use of rubber type was one of Goodyear's favorite ideas. His predictions have been in part verified in the immense amount of rubber type now used in the manufacture of rubber stamps. Something in this line, and yet more in the line of general printing, is the "All in a Nutshell" printing outfit, which is here illustrated. This has



also an effective method of instruction in spelling and in the rudiments of type setting. For sale by J. Francis Hayward, Congress Street, corner Franklin, Boston, Mass.

—In heavy rain or in deep snows, or in that horror of city life, the deep slush, ladies need some protection for their feet other than the ordinary foot-hold or low-cut rubber. They need a rubber to come up over the boot before and behind, that shall cover the larger part of the button or lace line on the

shoe, and that shall keep the garments from touching the leather and thus wetting the foot. An improvement in foot-wear which covers these points is the "Storm Slipper," the accompanying cut of which shows what it is better than words can do. At a glance it will be seen that it is a most practical thing—just what every lady wants for genuine stormy weather—and the popularity which it is sure to have will be partly due to the fact that it is a necessity, and partly that it bears the well-known stamp, "Manufactured by the Boston Rubber Shoe Co., Boston, Mass."

—It is coming more and more to be a recognized fact among those who wear rubber shoes, particularly among ladies, that

the lighter a shoe is, the better it wears. This is a radical departure for the mass, as it is but a few years since heavy goods were everywhere in demand and the heavier the rubber shoe the longer it was supposed to wear. A shoe which the makers are exceedingly proud of, and which hits the buyer remarkably well, is what is known as the "Woman's Zephyr Croquet." It is very light in weight and stylish in its general make-up, has the extra tap heel, and is put up in cartons that bear the name of the American Rubber Co., Boston, by whom it is manufactured.



A new idea which seems capable of development into a valuable invention is a clip which when affixed to rubber shoes facilitates their drawing on and taking off, lessening the injury to their edges and insuring better grip on the foot for them. The clip, which is of steel, is inserted in the top of a rubber shoe at a point around the heel; it opens and closes as may be required and the ring which manipulates it serves to pull the shoe on or off with the utmost ease.

—A rubber tooth-brush is something which at first thought might not strike a person as being desirable, but the fact that these goods are being more and more used, that the rubber brush when properly made cleanses the teeth better and polishes the enamel without the usual friction that may destroy it, proves that what little prejudice one may have is without foundation. A rubber brush is always clean, and may be used in hot or cold water in connection with any sort of tooth wash or powder without becoming foul or offensive, which is more than can be said of the bristle brush. There is no doubt that defective teeth may be caused by harsh treatment of the gums when young. It often happens that people complain of bleeding gums, which proves that the bristle brush is a rougher brush



than should be used, while a fine bristle brush that felt pleasant to the gums would be of no earthly use in cleaning the teeth. A rubber brush in this place would not harm the gums and would most assuredly cleanse and polish the teeth beautifully. For cleansing artificial teeth it is a most excellent thing. By drawing the brush from the handle a quarter of an inch it forms a perfect plate brush. These goods are made in two sizes and are the same price as a bristle brush. The handles are made of celluloid in four colors, amber, shell, pink agate and white. Manufactured by C. J. Bailey & Co., Boylston Building, Boston, Mass.

—The severe winter, with its attendant heavy snows, has brought the National India Rubber Company a most gratifying increase in the demand for their heavy snow shoes; and among these their latest specialty, the "Lumbermen's Extra Heavy Snow Excluder" is having a fine run of popularity. They make these goods both with and without their patent protected heel, and they are meeting with high favor among both dealers and wearers. Their "Monitor," also made with the patent protected heel, and manufactured exclusively by them, continues to enjoy a popular demand, as do also their "Sandals and Light Weight Ladies and Misses Goods," to which they have attached the patented protected heel. In fact, this specialty seems to



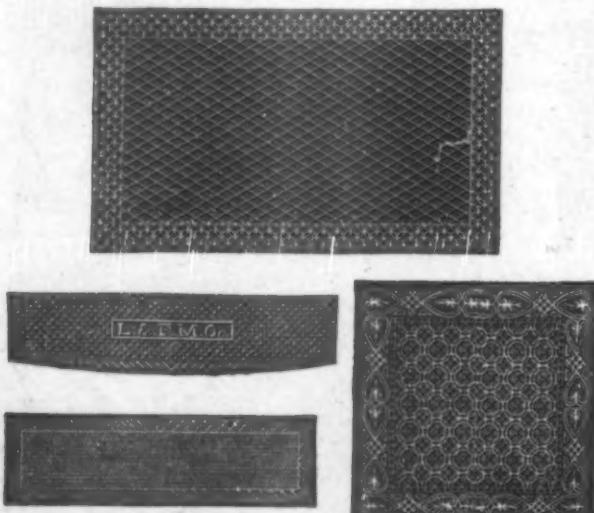
have made a hit with the trade and they are reaping a consequent rich reward.

—The wonderful progress that the manufacture of rubber has shown is perhaps more evident in the manufacture of rubber hands and feet, as well as arms and legs, than in almost any other line. They are today so made that they are durable, comfortable and exceedingly serviceable. The engraving herewith shown represents Ceaca Yamni, a Sioux Indian, dressed in his war costume. This brave lost his leg from diseases and was supplied with a patent leg having a rubber foot, which so thoroughly restored him that he mingles with his tribe and walks about and even dances with almost as much grace and energy as if he possessed his natural limbs. These goods are manufactured by A. A. Marks, 701 Broadway, New York.



—The Stoughton Rubber Company have recently begun the manufacture of mackintosh overgaiters for ladies and gentlemen, and also mackintosh leggings for ladies, and they are booking many orders for goods of this class. They are made in patterns to match their various designs of mackintosh coats and wraps, and they make an addition on to a costume so attractive that they are drawing custom nicely. In fact the Stoughton Company seems to be forging steadily to the front in neat specialties of this character, to complete their handsome line of manufactures.

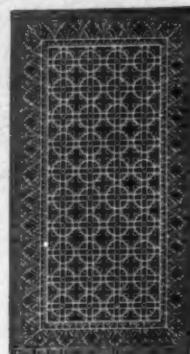
—The Boston Belting Company have lately gotten out several new patterns of rubber mats and stair treads, upon which patents have been issued to them, and in the accompanying illustrations the patterns are very accurately shown. This is



a special department of the company's works to which they have devoted a great deal of attention, and it is their aim not only to produce the highest quality of work in point of artistic effect, but to give their goods such quality as will maintain their reputation for excellence of material. These patterns are

manufactured in variety of sizes to meet various requirements, and in special cases the company adapts them to the needs which a buyer may direct.

—The latest patterns of "Diamond" mats manufactured by the Gutta Percha and Rubber Manufacturing Company, New York, are well represented in the three illustrations given here-



with. This is a line of business in which there has been a great deal of commendable rivalry among the rubber manufacturers, and in the effort to lead the van the Gutta Percha Company have taken a position which is second to none. They issue a very handsomely printed catalogue devoted specially to mats, stair treads, etc., in which all of their various patterns are very accurately represented, and the dealer in this line of goods cannot do better than to have one of these handy and handsome little catalogues at hand before placing his orders. The goods rank very high in point of artistic beauty and the quality is of the very first grade.

—The Cleveland Rubber Company start off with the determination to make 1891 a memorable year in the record of their new Seamless-Tube Hose. It is a specialty with them which has commanded approval everywhere, and they are now taking steps to make it a great leader among their specialties. The striking announcement concerning it which will be found in our advertising pages, cannot fail to attract attention, and in their new catalogue they say of it:

"We have applied for letters-patent covering hose with a seamless tube, and our trade mark is placed on every length so made. No other manufacturer is licensed to make it, and users should see that our name appears on every section.

"Whoever will give this subject a moment's thought can appreciate the great value of this improvement. The lapped seam in hose has always been a source of trouble and perplexity to manufacturers. Hose so made can never be considered perfect, as the lap in the rubber sheet forming the tube is liable not to perfectly unite, the entire length, and water reaches the duck.

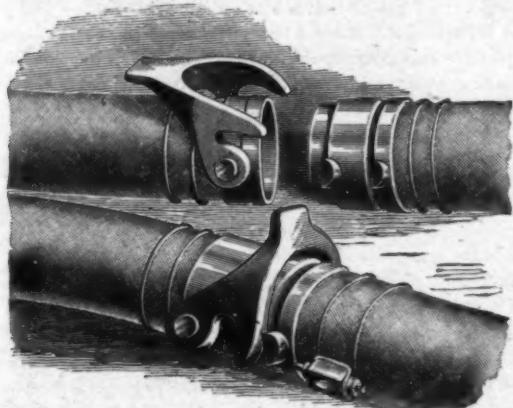
"We have overcome this heretofore insurmountable obstacle by running a seamless tube (somewhat after the manner of lead pipe), and claim that it is the only way perfect rubber hose can

be made. We venture the assertion that nine-tenths of all defective hose, is so because of faulty seams. Examine a piece of bursted hose; you will find that the water has first got through the imperfectly united rubber lining, and decayed and impaired the strength of the duck. Take an ordinary piece of rubber hose in your hand and compress it at the end; you will observe that the tube opens at the seam, showing that it has only partially knit together. Now test in like manner our seamless tube hose; you will not be able to discover any such weakness; it is a no-seam hose; it cannot be penetrated by water; it is invulnerable.

"If you wish to keep your customers satisfied, and avoid annoying complaints because of sweating, bursting, pinholed, defective hose, use the seamless. It may cost a trifle more, but what is that compared with the satisfaction of having an article that will stand hard service and stay sold?"

—We give an engraving of a form of patented hose couplings, manufactured by the National Hose Coupling Co., Pomona, California.

These couplings may be instantly connected or uncoupled without the use of a spanner, and are, therefore, especially adapted for attachment to fire hose, in the use of which even a small fraction of time is often of great importance. The coupling illustrated is to be used in connection with garden or



street washing hose. This form of the coupling is provided with a forked hook pivoted on diametrically opposite sides of one-half of the coupling, the hook being cam-shaped and adapted to engage lugs upon the opposite half of the coupling, so as to draw the two parts firmly together, thus compressing the elastic packing contained by the coupling, and insuring a tight joint.

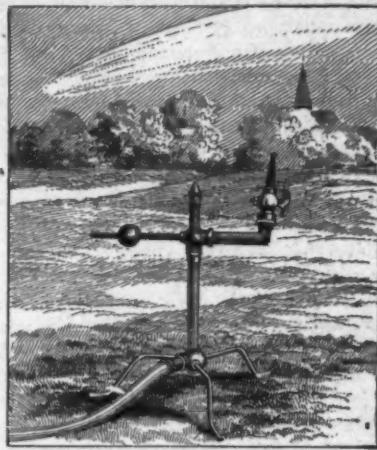
The fire hose coupling, united and separated, involves the same principle as that of the garden hose, with the addition of a lock or fastener, which holds the double hook firmly in position.

For further information in regard to this coupling, and samples, address the National Hose Coupling Co., of Pomona, California.

—The mechanical goods department of the Metropolitan Rubber Company, reports that they will bring out some new features before long. They have done an excellent business, and the prospects for this year's trade is very bright. The "G. H. M." hard rubber tubing is being sold in large quantities. A new leather cloth is taking well. Some new ideas in cheap clothing, in imitation of worsted effects, are being made up in

Langtrys, Newmarkets, etc. Good orders are being received for clothing in such a manner as to indicate that prices cannot much longer remain at the present figure.

—Messrs. W. D. Allen & Co., Chicago, have recently introduced a lawn sprinkler of very decided merit and certain to find a large sale. The invention is a radical departure from all previous devices, and a great improvement both as to its practical utility and variety of forms of spray either as a stationary or rotating fountain. It is designed to be used with any spray nozzle; counterbalanced on the opposite side by an adjustable weight as shown in the cut. It is susceptible of an infinite variety of changes; when poised upright it forms a stationary fountain of all the various forms of spray the nozzle used is capable of. When it is slightly inclined toward the horizon it will move slowly around, and the more it is inclined the faster it will move, from less than one turn per minute to more than sixty; and as it moves around, the outflow being from a single orifice, a cloud of mist seems to follow, like the tail of a comet. Its scope is from less than 100 square feet area watered, to more than 2500.



#### How to Select Steam Hose.

IN their new catalogue the Cleveland Rubber Co. present some points in the matter of selecting and adopting steam hose, which are valuable. They say:

The hose will easily stand the required pressure, but the intense heat accompanying it causes the rubber to gradually harden and lose its adhesive and elastic qualities.

The following table, showing degrees of heat accompanying different pressures, should be consulted by buyers and users of steam hose:

30 lbs. pressure, 250 degrees. 60 lbs. pressure, 292 degrees.  
80 lbs. pressure, 312 degrees. 100 lbs. pressure, 327 degrees.  
120 lbs. pressure, 341 degrees.

For best results and economy in its use, we recommend ordering according to the following table, which has been compiled on the basis of experiments referred to:

Where a pressure of 25 lbs. or less is used, 4-ply should be ordered for 1 1/4 and smaller sizes. 5-ply should be ordered for 1 1/2 and larger sizes.

Where a pressure of 60 pounds or less is required, 5-ply should be ordered for 1 1/4 and smaller sizes. 6-ply should be ordered for 1 1/2 and larger sizes.

Where pressure exceeds 60 pounds, add one additional ply to above for every 10 pounds of steam.

Where 90 pounds or more steam pressure is required, the hose in addition should be wire-bound. If wire-bound, a less number of plies will answer.

THE Brooklyn Rubber Works, C. B. Dickenson Agent, removed to 215 Centre Street, New York, January 1.

## The McKinley Bill and the Rubber Trade.

TO THE EDITOR OF THE INDIA RUBBER WORLD: I feel that the article in your issue of December, entitled "A Trifle Gossipy," should be replied to.

It is surprising that a gentleman possessing so little knowledge of the facts, and so afraid of having his name known, should have so foolishly brought about this discussion in print. It is not surprising to know, however, that all the other members of his own company differ from him, as it would most likely be impossible for him to find a single other manufacturer of rubber clothing that would agree with him.

Yet, of course, the judgment of all the manufacturers in the United States is wrong, and we at once, because he says so, admit that it was the biggest piece of foolishness ever committed in getting the increased duty on rubber clothing.

He first states that there is not an industry in the United States that has grown so rapidly, or made more money. This is misleading, as we are not dealing with the rubber industry as a whole as the tariff (as increased) only applies to rubber clothing; and in this line there have been as many manufacturers that have been obliged to reorganize with more capital, and firms that have failed, as there are now manufacturers engaged in this branch of the rubber business.

His proposition that the manufacturers of rubber clothing could stand on their feet against the competition of the world, and his statement that they did so before the increased duty are erroneous, and shows that he has not considered the following fact: that within eighteen months or two years there has been a great change in the kinds of rubber clothing demanded of the manufacturers; a much finer grade is called for, both for ladies' and gentlemen's wear. The raw rubber, on which there is no duty, is but a trifle in the cost of the goods that are now demanded. The labor, and the cloths we are compelled to buy, are now the very important items with this change in the business, which is known to all, and with the large duty on cloths and the great difference in labor, which is so very much higher in this country than it is in England, our industry was ruined without the increased duty.

His fourth proposition, that we were competing against a "systematic undervaluation," is like his others, I fear, made without positive knowledge; as a thorough investigation was made by a committee appointed to discover if such was the case, before Congress was applied to for the increased duty. The committee did not find such a state of things; but, of course, the gentleman going into print with such a statement, can cite *one* case of undervaluation.

He next speaks of the rubber clothing manufacturers having the reputation of being "piggish." I fear his information on this point is not any more reliable, or worthy of any more credence, than his other information or views. I would like to call his attention to the fact that last year, before the "foolish" work of the gentlemen who were successful in having the duty increased, no less than four large English manufacturers opened offices in New York City for the sale of their English made rubber goods; and that they were quite successful in securing a large business that the American workman and the American manufacturer should have had. But, as soon as this "foolish" work became effective, one of the largest of these English manufacturers instructed his salesmen to take orders (at about the old prices), to be delivered April 1, 1891, the goods to be made here in this country. This is all right. We welcome him as an American manufacturer, as he will be obliged to pay as much for his labor as any of us. His advantages over us are none when he manufactures the goods in America and em-

ploys American help. But we seriously object to importing into this country garments made by the poorly paid workmen of Europe, displacing garments that should be made by American workmen who receive good wages. And is it not a fact that, to-day, the manufacturers of rubber clothing as a whole are not able to run their factories, or give employment to their workmen for more than eight months in the year? This being so, I ask is it right for the American workman to lie idle, while the English manufacturer is glutting the market with his goods?

Free trade for the rubber clothing manufacturers would mean idleness for the American workman and ruin for manufacturers, without any benefit for any one in this country. The consumer to-day is buying American made rubber clothing at just the same price as before the passage of the McKinley bill; not one cent is coming out of the pocket of the consumers, on the contrary, by reason of this wise protection, each manufacturer is stimulated to place on the market a higher grade of goods, and he can do so without increasing the prices, because, foreign goods being shut out, his sales are and will be larger, thereby reducing the cost of his production. So, as a matter of fact, the consumer will own his American made rubber clothing a little cheaper and better. So the statement that the duty, which is given by this bill is a protective duty for the exclusive benefit of the manufacturer, is at least incorrect. The manufacturer will not get a cent more profit on his goods only by reason of increased business. The American workman gets the increased work at good American wages, and is the greatest gainer.

The foregoing facts are a complete reply to the editorial in the Grand Rapids paper, and Senator Carlisle is to be excused for his inaccuracy, as he says he made the statements from what he had been told, and not from knowledge.

The 50c per lb. duty and the 50% *ad valorem* duty applies about wholly to ladies' goods (which weigh not over two and a half pounds, not four and a half, as he says) very few, if any, all cotton gentlemen's goods are imported, and there is not a rubber garment of any kind made to-day into which 2 lb. of rubber is put—one pound would cover it.

The free rubber and the free cotton that so much stress is laid upon does not apply when practically considered. It is the printed cotton cloths, part wool, wool, worsteds, and silks that we are now using on which there is a high duty.

But above all, and beyond all, it is the difference in the cost of manufacturing by reason of the much higher wages paid to the American wage earners.

These facts may not be so gracefully put, but they cannot be truthfully contradicted, and it will be long after my day in the rubber manufacturing business before the American wage earners, when they understand the subject, will vote to destroy their prosperity and happiness.

L. D. APSLEY.

## New Offices for the Okonite Company.

THE new factory of the International Okonite Company (Limited), at Passaic, N. J., being practically finished and in tip top running order, this enterprising and progressive concern have turned their attention to improving their New York headquarters, at No. 13 Park Row. By the acquisition of three or four more rooms in addition to those formerly occupied by them, they have acquired every facility for the expeditious conduct of their immense business. The new offices, while richly artistic in all their fixtures, have an air of refinement and propriety in their elegance which precludes the idea of display. Everything is elegant, but everything is elegantly serviceable and as a whole the company can safely lay claim to offices which in point of convenience and elegance cannot be surpassed by any of their size in the city.

## Hoolihan's Intelligent Phonograph.

"I'VE got the funnyest masheen that iver ye hearrd tell av," said Hoolihan one fine day, suddenly appearing in the midst of a group of his bosom friends.

"What is it for?" was an instant inquiry.

"For? Be gob it's for tellin' a man phwat to do in his business. Sure ye jist start its jaw to runnin' and ye'd think 'twas yer own ould woman a mimmikin' phwat ye said."

"A sort of mechanical parrot?" inquired a listener.

"Parrot is it? Niver a parrot had the intilligences av this wan. Av only that masheen had a hook nose an' rid hair, you'd swear 'twas yer own mother, Tom Smith, an' soa ye would. Talk! sure it'll saay anny thing. Jist fur experimetaation sake I gev it a few chice ould Oirish oaths, ter see av it had anny delicacy about the matther, an' I hope ter die av the crathur didn't swear back at me loike a throoper."

"Oh, it's a phonograph?"

"That's just phwat it is, an' a moighty funny graph ye'll foind it. Come in bys anny toime an' I'll intrejoose ye, an' lave ye converse wid it."

Hoolihan's new fad was not long in becoming known, and the boys were not backward in becoming "intrejooded" to it. It was more than funny to see the jolly Irishman, sitting before the whirring cylinder, the tubes up to his ears, listening with boyish enjoyment and keeping up a running comment of "Hear that, now! Ye impi-dint vagabone! Well, by gar, av that doan't bate the divil!"

Among the listeners and most frequent of the callers was a solemn appearing young man, who showed a deep interest in the wonderful machine. When the proprietor was in another part of the store he hung over the phonograph as if enraptured and seemed studying its every part. The rubber tubes that convey the sound seemed to be of especial interest to him, for he was continually taking them off and examining them, and once, when quite alone, he added another length to one of them, and passed it under the machine and through a hole in the wooden partition back of it. A day or two later he approached Hoolihan with an air of deep mystery.

"You remember telling us that your phonograph would give a man business advice?" he said.

"I was only foolin'—sure I knew it was only a sart av echo," was the reply.

"Come with me and see if that is all it is," was the answer, and the rubber man, scenting something unusual, and enjoying it with all his romantic nature, followed. Seating himself and putting the tubes to his ears, by the other's direction he asked:

"Who is this talkin'?"

"Mr. Hoolihan, my proprietor," came the faint answer.

"Howly mother, will yez hear that!" gasped Hoolihan, excitedly. "The dom thing's aloive!"

"No, no!" said the young man soothingly. "It's merely an electrical result. It's no more strange than it is for the telegraph to send messages from here to England in a moment of time."

"That's soa," was the doubtful reply. "But sure av I'd known it could hear I wouldn't av sworn at it soa the day beyant yesterday."

"Oh, I don't mind it," piped the voice. "I say bad words myself when folks forget to oil my wheels."

"The saints protect and gaard us!" exclaimed the listener.

"Ask it some business question, and then I'd let it alone for to-day," advised the young man.

"Phwat stock will I be buyin' this winther?" promptly inquired Hoolihan.

"Arctics!—Arctics! big orders—good by!" came the answer.

"Your house jobs artics doan't it?" asked Hoolihan, as he followed his young friend down to the other end of the store.

"Yes, sir, why?" was the modest answer.

"I think I'll give you an ordther."

"Very well, sir; I shall be glad to fill it, but I must say I am surprised, as artics have not been good sellers of late."

The order was given and the young man went off with a twinkle in his eye. Hoolihan, however, did not stop there, but went out and quietly bought up almost all the artics in the market. When he had gotten his fill he came back and looked longingly at the phonograph.

"I'd like to ask it whin I'd best begin to unload me artics," he muttered to himself.

Finally he went up to it, adjusted the tube, and bending over the machine called out telephone style, "Hulloa, Cinthral!"

"Hullo, Irish," was the prompt answer, but with an unmistakable Hibernian accent.

"I spoase it doan't loike to be called Cinthral," muttered Hoolihan, swallowing his wrath at the impudence of the reply.

"I've bought a hape of artics," he said, humbly. "Phwat had I best do now?"

"You'd best lave off ating onions if you want civil answers from this masheen."

"Howly shmoke, it's got a noase!" thought the bewildered man, then he said, "I'm sure I ax yer pardon. I do ate an occasional onion, but I'll do it no more. Sure it's only for the saake av me deesepsy that I ever take them."

"More loike to hide the rum in yer breath," was the answer.

"Saay, now, I'll break your faace," cried Hoolihan, suddenly losing his temper.

"You ain't the soize!" was the prompt response. "Ye North av Oirland blaggard. Sure it's the yaller jandthers ye look to have yer soa much av an Orangeman!"

Hoolihan paused in helpless, wrathful dismay, but when through the tube came the Battle of Boyne whistled shrilly he could contain himself no longer, but jumping upon the phonograph, kicked and thumped it until it was wholly wrecked.

"There," he said finally, "I'll lerrn anny masheen to insult me."

As he strode away his son Tim slipped out from the room in the rear, his fat face red with suppressed laughter, his eyes brimming with merriment.

Inquirers after the phonograph at the Hoolihan store got little satisfaction until the winter was well advanced, when it became manifest that the buying of arctics had been a very wise move. It seems that for several winters trade in them had been light, and the rubber mills had not only made fewer of them, but the mills that made the linings had devoted themselves to other work. Hence when a snowy season came, and come it did just when Hoolihan most wanted it, his speculation was a success.

"Av only I had won av thim funny graphs that could kape a civil tongue in its—its—its intarior—I'd be a rich man," soliloquized Hoolihan, as the last case of arctics was carted away.

#### Letters to the Editor.

##### Working With Hard Rubber.

EDITOR INDIA RUBBER WORLD:—Enclosed please find subscription for one year.

In answer to "L. M.'s" inquiry allow me to say I am an experienced hard rubber manipulator, and have tried for a long time to make hard or soft rubber have some affinity for salt either in brine or crystallization, but have failed. Rubber becomes brittle, and goes to pieces in a short time. Asphalt is a fair protector of metal and paper against salt corosions. Probably "L. M." could make a solution with it to protect his rubber, if surface be corrugated or vulcanized in talc without a tin coating.

Yours respectfully,

C. McMULLEN.

Rock Glen, Wyoming Co., N. Y., Dec. 28, 1890.

##### The Quality of Rubber Foot-Wear.

EDITOR INDIA RUBBER WORLD:—I have often read in newspapers, and in fact heard it said, that the ordinary rubber shoe as made to-day is compounded entirely from old rubber boots and shoes that have been gathered by junk men, and melted up and used over again. Is this so, and if so, are there any companies who do not pursue this course? Very truly,

J. G. M.

[In reply we would state that the ordinary newspaper squib to the effect that rubber shoes are made of shoddy and contain no pure rubber, is either a willful lie or an idiotic misconception of fact. In the second place, while old rubber boots and shoes are gathered and the gum taken from them is used again, it is not by any melting process, nor is it as a rule, used in such quantities that it is other than a benefit to the shoe. This may not seem reasonable to one who is not familiar with the rubber business, but it is an actual fact that a gum can be produced from old rubber boots and shoes that of itself would make a very decent article; and when compounded with fresh gum that has all the qualities of good rubber, will last as well as if the whole product were of fresh rubber. That shoddy, or recovered rubber, is used, no rubber man pretends to deny; but that rubber boots and shoes are inferior to-day to what they were a few years ago, is what all intelligent rubber men deny, and if people are careful in selecting their rubber foot-wear, and if they have no knowledge of the goods themselves, would get reputable shoe men to select for them, and if they further would not try to get a dollar article for twenty-five cents, there would not be this everlasting cry of distress about the poor quality of rubber foot-wear.—EDITOR.]

#### Working Up in a Rubber Factory.

BY A FORMER SUPERINTENDENT.

ONE bright summer morning a messenger came and summoned me to the office, and grimed as I was with the work of superintending the mixing, I at once hurried in. I found my employer sitting at his desk, with an excited flush on his cheek, in earnest conversation with a tall, grey-haired gentleman, a little past middle life. On the desk before them were a number of lumps of dark-colored stuff that looked like rubber and yet gave me a singular impression of being counterfeit. I can hardly explain the peculiar repugnance that my single look at those samples gave me. It was but a momentary impression or intuition, and one that I almost entirely got over in after years.

"What do you think of this, Tom?" asked my employer, holding out a piece of the gummy substance.

I had made mistakes enough in passing judgment on different kinds of rubber compounds to make me somewhat cautious in giving a reply, so I took the sample, smelt of it, and thought I detected an oily odor; tasted of it and was sure that it had oil about it; lit a match and burned a crumb of it, and could detect no smell of rubber about it. Then by pinching it and stretching it and pulling it, I tried to get further information as to its make-up and capabilities, the stranger and my employer in the meanwhile watching me with eyes full of the keenest inquiry.

"Well," came the question again; "what do you think of it—what is it any way?"

"I'm sure I don't know what it is," I replied frankly, "but my honest belief is that it isn't much good for the rubber business."

Here the stranger at once took up cudgels in its defense. "Young man," said he, "Suppose I could make that stuff for one-fifth of what your company pay for rubber,—suppose after I got it made that it would last longer than rubber does, and that neither acid nor alkali, nor any ordinary solvent, could injure it at all, wouldn't you think I had a pretty good thing?"

"Yes, sir," was my reply.

"Well, suppose further than that,—suppose I could go to work and compound that, use it in the place of rubber, and put it somewhere where it would be just soaked in oil, and the oil would not penetrate it or soften it as it does rubber; wouldn't you call that a big thing?"

I remembered at once the belts that we made that ran in oily places and that invariably came back to us, the rubber gummed, softened and spoiled; I recalled valves that had been put in oily places and in a few weeks had become doughy and spongy and useless, and I replied, honestly:

"I think it would be one of the biggest things in the business if you could do that."

With twinkling eyes the old gentleman drew out of his bag a piece of his gum spread upon cloth and immersed in a bottle of oil. This he showed me to be absolutely unharmed. My first prejudices melted away very rapidly under the arguments and eloquence of the inventor. I could see without any trouble at all that my employer was more

than half converted to the theory that a remarkable thing had been discovered, and was just itching to get an interest in it—indeed, so interested was he that after I returned to my work he asked the inventor plumply what he would take for his secret, and the other as plumply replied, "One hundred thousand dollars cash and a royalty of five per cent. on all manufactured goods." The mention of the sum that he wanted was like a dash of cold water over the eager manufacturer, for in those days one hundred thousand dollars was a great deal of money. I have always believed that had the man put a reasonable sum on his invention, ten, twenty, or even thirty thousand dollars, he would have received it; but overrating the value of the discovery, he put his price too high, and the result was the would-be purchaser thought it better to temporize and go a bit slowly before investing so large a sum.

The process, of course, was a secret one, and the inventor would give no idea of what any of the ingredients were. I, however, was very sure that I had smelled linseed oil, and therefore my first thought was to find out if linseed oil could be solidified in any way. An old chemist in the town was appealed to, and he told me at once that there was no difficulty about oxidizing linseed oil, and to prove it he oxidized it in several different ways. One way that I remember was to pour the oil over panes of glass and allow it to oxidize in the air, just in thin films. Another way was to boil it a long time and put sulphur in it. One of the last experiments, with the addition of sulphur, I think, produced something quite similar to the gum that the inventor brought into our office, and when I had secured it I took it to my employer. He was at once wild over the discovery, and said that we had a fortune in our grasp—that I should have a share of it, and a great deal more than he no doubt forgot the next day. At all events, he got a kettle and some of the best linseed oil, and, after a good many failures, succeeded in getting a batch that looked quite like rubber. Weighing out a portion of it, I attempted to compound it on hot rolls, as I would the genuine gum, and in a few minutes the rolls were so sticky that I was compelled to stop the machine and with a huge butcher knife scrape off the gummy mass. Even a cold roll did not get along much better. Then I found that the gum would not carry any amount of compound, which was a sort of disappointment to me.

My next series of experiments were in the line of combining the substitute with Pará rubber, and in this line I did much better, but when I came to test the result and compare it with a compound of equal cost made of Pará rubber and whiting, I found that the latter was much the stronger of the two. In addition to this I found—although this was much later on—that the substitute that I had made contained a certain amount of free oil which worked upon the rubber and rotted it.

Of course, in speaking of my troubles with substitute at that early day I am far from condemning some of the excellent rubber substitutes on the market to-day. I do not believe that any substitute in existence can really take the place of Pará rubber, but I do believe that some of the best of them can be used to advantage in connection with rub-

ber for certain goods. The conclusion that I came to after long experimentation with my substitute, was that we could not afford to use it. Rubber then was cheaper than now. Manufactured goods were sold at a good profit. We had established a sort of reputation for our products, and in spite of the gilded dreams of my employer, my common sense told me that we had better fight it out on the line we were working then. I remember my employer telling me one day that the business was not gotten down to as fine a point as it should be. He said, and rightly:

"There are many wastes; we haven't any recovered product to work in with our new gum. The time comes in every business when the recovered product is a big feature of it. Just how it will come in the rubber trade, I don't know, but you mark my words, my boy, one of these days these bits of vulcanized rubber that you see lying around the finishing-room,—these old rubber shoes that we burn up under the furnaces, and all the rest of this stuff that to-day is worthless, will be worth money, and will be used again in making rubber goods."

I did not believe it, and I doubt if he really believed it himself, but I do think that it was the appreciation of the fact that there was no recovered rubber that led him to look so carefully into the substitute. He, however, did not oblige me to use it, and after a time,—being interested in large enterprises outside of his own mill,—he appeared to forget all about it and we went on our way ignoring the substitute, using rubber and knowing nothing of the shoddy that we got so well acquainted with years after.

A curious thing in connection with this matter was the action of the inventor after my employer decided to have nothing to do with him. He went directly to the rival mill that had hired our foreman and showed them what he had. They were so much interested there that the proprietor raised a hundred thousand dollars, put up a small factory-building for the inventor and set him at work getting out samples of goods and perfecting his gum, for, whether I mentioned it or not, the old gentleman was very sure of the fact that as long as he had made something that was so near like rubber with crude apparatus, with a better appointed laboratory, he could turn out something that should be as good, as elastic, as fine Pará rubber, and infinitely cheaper. As he had received the most of his purchase money the old gentleman was pretty well satisfied, and he entered upon his laboratory duties with no overpowering anxiety to finish the problem he had already begun on. For five years, with one excuse after another,—always on the borders of success, yet meeting all sorts of failures, this persistent inventor toiled in that little laboratory. Then his health broke down, he was taken sick and died, and with him died the secret of manufacturing a perfect substitute for India rubber—that is, provided he ever had it.

GUTTA percha derives its name from the Malayan words gueta, a gum, and percha, a cloth, and was introduced to the civilized world in 1842 by Dr. Montgomery, a Scotch surgeon. The first specimens were taken to London from Singapore by Jose Almeida, and the properties of the gum were announced by Hancock, Wheatstone and Faraday.

## Early Times in the Rubber Trade.

1846. J. W. HARMON patented the softening of India rubber by grinding, and by the use of, either turpentine or naphtha combined with steam.

Tappan Townsend patented the placing of hose between railway cars for various purposes. The idea at that time was in the direction of ventilation.

W. C. Fuller patented the application of rubber cushions to the ends of railway carriages. He formed the buffers of discs of India rubber, with strips of metal inserted between, the metal discs being larger in diameter than those of the rubber. He also formed springs of long India rubber straps extending along between teeth.

The English inventions of note during the year were as follows :

Charles Hancock, making certain improvements in the manufacture and applications of gutta percha. After cleansing the gum it was placed in a plastic state in a cylinder screw press, kept hot by a steam jacket, and having a bottom perforated with numerous holes. Through these strainers it was squeezed several times, as often as was considered expedient. An alternative was to dissolve the gutta percha as imported, and filter it, while warm, through flannel, felt, or fine wire gauge, after which the solvent was distilled off. Hancock also combined gutta percha by means of a masticator with jintawan and caoutchouc, or by adding orpiment, or other sulphurets, or sulphur to the compound of the gums. His formula was 50 parts of gutta percha and 24 of jintawan, 20 of gutta percha and 6 of orpiment. This was heated to a high temperature, which made the product more lasting. Hancock also made sponge by using alum, or carbonate of ammonia, and heating the compound in an oven in moulds. He made it hard by confining the mass in moulds in a high temperature for several days. He rendered it soft and pliable by exposing it to sulphurous acid gas, and still more pliable by adding wax, or tallow. He made varnishes by heating the compound under pressure to a temperature of 300 or 380 Fahrenheit, or combining the compound with wax, or animal and vegetable fats, and dissolving the combination in turpentine and then evaporating it. In the compound the quantity of gutta percha stated in the formula was diminished as a greater degree of elasticity was required and vice versa for increased firmness. All of Hancock's improvements in the manufacture of gutta percha at this time created much interest in the United States as well as in England, the Commissioner of Patents in our country devoting much space in his report to a discussion of his methods.

Thomas Hancock patented a mode of manufacturing and treating of articles made of caoutchouc or its combinations. He placed the combination in or upon moulds, plates or forms during the process of vulcanization. He forced the caoutchouc into such moulds by pressure and heat. He also combined caoutchouc with vegetable pitch, resin, wood and cork dust, and fibrous substances, subjecting them to vulcanization. In all these compounds he prevented adhesion to the mould by dusting on silicate of magnesia.

Alexander Parkes treated caoutchouc, gutta percha and their compounds by the use of chloride or hypochloride of sulphur dissolved in bisulphuret or sulphuret of carbon, coal, naphtha or turpentine. He also introduced a new solvent by passing sulphurous acid gas over granulated camphor until a liquid was produced.

He also submitted caoutchouc and its compounds to such gases as sulphurous acid, chlorine, nitric acid, fluorine, or the vapors of bromine or iodine. The article was suspended

in a vapor of a solvent and the gases, one or more of them passed into the chamber.

These articles, before being changed, were combined with innumerable fibres, or earths, or oxides, or bronzes. Also with resinous gums or the cow-tree gum, or the wood-tree gum from Van Dieman's Land. The articles were ornamented by painting and printing. He also recovered the waste of the gum by boiling it in a solution of muriate of lime, in certain proportions, until the pieces could be readily united, when it was washed in hot alkaline water.

Later in the year Charles Hancock made other improvements in the manufacture of gutta percha. The acidity or smell of the gutta percha was diminished by subjecting it first to an alkaline solution, and then to a solution of chloride of lime. A large number of compounds are mentioned, they chiefly being dissolved in bisulphuret of carbon.

1847. CHARLES HANCOCK's patent proposed a new combination of materials for sulphuretting gutta percha. His proportions were 48 parts of gutta percha, 6 parts sulphuret of antimony or hydrosulphuret of lime and one part of sulphur, all boiled under pressure. Caoutchouc was treated similarly. He also submitted the gums to steam heat and the vapors of orpiment and sulphur, etc. He employed binoxide of nitrogen and chloride of zinc for the purpose of improving the quality of gutta percha or vulcanized caoutchouc. He brushed the gums over with a solution of resin in boiling oil, and placed it in a heated chamber from 75° to 100° Fahrenheit for several hours, when afterwards it took a Japan-like polish.

He cut the gutta percha into strips or ribbons or into thread. This was done by a pair of grooved rollers of steel or iron mounted in a frame. This patent was commented on in our own patent office, and doubtless attracted a world-wide attention.

Thomas Forster patented improvements in machinery for cutting India rubber, for rendering fabrics waterproof, and for dissolving India rubber and other gums. His solvents were alcohol and coal-oil. He also used alcohol when combining India rubber with shellac.

Charles Hancock patented improvements in gutta percha, using baths for that purpose. In these baths he used carbonates of potash or soda, or muriate of lime, or other salts. He also used fixed oils or fats. He sometimes enveloped the gutta percha in cloth, plaster of Paris, clay, etc. He also boiled the gutta percha in a bath of caustic alkali mixed in certain proportions with oxides of iron and lead, glue and bitumen. This rendered the gutta percha harder, more durable, and better adapted for bearing friction and resisting the weather.

Thomas Forster brought out another patent combining gutta percha with animal charcoal, whalebone, hydrate of sulphur, musk, tonquin beans, orris-root or gum-benzoin. He cleaned gutta percha by cutting the blocks into small pieces, after which they were passed cold through crushing rollers, and well washed in lukewarm water.

Thomas Hancock and Reuben Phillips on the last day of the year took out a blanket patent involving many processes, one of which was making moulds of materials capable of being dissolved at temperatures so low as not to be injurious to the manufactured material, such as Darcey's alloy, or compound of gum, glue, etc. There were no United States patents in this year of note.

Dr. Oxley called attention to the great destruction of gutta percha trees around Singapore. In order to obtain the gum the tree was felled, and for the comparatively small exports whole forests were leveled. The agitation that ensued was pro-

ductive of good results, and tapping was substituted. The loss was so great, however, that Borneo acquired afterward a prestige that at the start belonged to the Singapore section.

1848.—Gutta percha hose and tubing began to be used. Gutta percha also was used for shoes, and to some extent employed as a substitute for patent leather, but as it was found for the latter purpose not to be durable, it gradually was abandoned.

About this time the use of gutta percha as an insulator began to take form, and the establishment of manufactories both in America and Europe began to be noted. In America, the building of a factory by the American Gutta Percha Co. in Brooklyn, N. Y., took place, and this company is still in existence, being known now as the Bishop Gutta Percha Company.

William Henry Barlow, and Thomas Forster, took out patents for the coating of telegraphic wires with gutta percha. It was combined with cowrie or New Zealand gum, and flowers, or milk of sulphur. Eight parts of gutta percha were kneaded at a temperature of 120° Fahrenheit, with one part of cowrie and one part of flowers or milk of sulphur, the divisions being by weight.

Charles Hancock employed glass moulds for shoes and galoshes made of gutta percha. In complete insulation he boiled gutta percha with muriate of lime, afterwards sifting resin on while the compound was being passed between heated cylinders. Later in the year he brought out a variety of moulds and apparatus for various purposes, all intricate in their designs and modes of operation. In moulding gutta percha on to continuous lengths of wire, etc., he used the combination of a die box and a cylinder with piston, each working in directions at right angles, or more or less tangential to the other.

#### Africa's Rubber Reservoir.

THE few words with which Stanley has dismissed the topic of African Rubber trees, seen during his last expedition, are supplemented by the following account by one of his lieutenants, Mr. A. J. M. Jephson :

In Emin's province are vast quantities of India rubber trees, and Emin sent to Khartoum a hundred lumps of the stuff as big as your hat. It was four or five years old, and yet when a lump was cut open the interior was as yellow and clear as amber. If a lump of this rubber were dropped it would rebound as high as one's head. The traders in Khartoum said it was vastly superior to the Brazilian product. From the fact that it had been kept without rotting for four years in that climate they claimed that the natives were proficient in the art of curing it. The natives, you know, use it for smearing the inside of their wicker baskets, which they weave very nicely, so as to hold water, and they make them into knobs for drumsticks, too. This one product alone will pay for the labor and money and time put into the expedition, for it exists in almost inexhaustible quantities.

"I DON'T see how men who make rubber tooth-plates keep out of the poor-house!"

"Why?"

"Because they have so many mouths to fill."—*Epoch*.

"I'D like to borrow one of your longest hose," said a girl to the captain of a fire company.

"What do you want it for?"

"I want it to hang up for Christmas."—*Judge*.

#### Belt Thickness.

Written for THE INDIA RUBBER WORLD.

BY ROBERT GRIMSHAW.

VERY few power users stop to think what it is that makes a belt drive; they go on the principle that the belt somehow pulls the power along as Pat played the fiddle; "by main strength." So they get a thick belt, and put it to drive one pulley by means of another just as though it was a chain driving one sprocket-wheel from another. When the belt slips they wonder what was the matter and say that a single belt drove that load last year, and a double one ought to drive it this. Sometimes they will be even inconsistent with their own ideas of the belt driven by its strength and nothing else; for they will lace the double belt with the very same lacing that they use on the single one. Then they will stand by and wonder (or swear, as the case may be) when the belt refuses to do more than the single belt did. Sometimes it will be found that the thick belt will not do so much as the thin one of the same width. This has been found out over and over again, particularly by the electric light men, who want, moreover, that a belt shall do something more than merely keep the driven pulley going round. They want it to be kept at a regular rate; and they often find that while a thick belt will keep the shaft turning, it is at a very varying rate; sometimes with a rush and sometimes with a slip; and that sort of thing is not good for dynamos; neither is it good for bolting reels in flour mills; nor for spinning machinery, nor for other classes of machinery where the value of the product is affected by the regularity or irregularity of speed. In such cases a "light double" is often found not only to drive better than a single one of the same width, but better than a heavy double; every other condition being as nearly as possible the same.

A belt requires two things—grip on the pulley, and a hold on itself; that is, it must have strength enough at its weakest point not to let go, when a sudden strain, or any other strain, comes upon it. It must be admitted that doubling the thickness of a belt does not enable it to have any better grip upon the pulley. There is no seeing how it could. It can be seen however, and it has been proved by tests innumerable, that extra thickness by making the belt stiffer, lessened its gripping or driving power under equal conditions. If a thick belt is laced with the same material applied in exactly the same way, it cannot have any greater driving power at its weakest point—the fastening. Even if the belt be made endless so that there should be no weak points; or even if it should be made with a fastening which would be double as strong as that of the single belt of the same width, the grip is not increased any; and a belt is bought and put on for the purpose of gripping. Spread the same amount of leather or rubber, or canvas, over a greater width upon the pulley face, and there will be greater driving power. All the tables which give the driving power of a belt by calculations involving the area of cross section, give only the *maximum* driving power. They go upon the assumption that the belt will have grip

enough to break it. This can be got only by excessive tension or by greater arc of contact than is likely to be given them. A twelve inch belt one-sixth inch thick has the same area of cross section as a six inch belt one-third inch thick, and if grip enough can be given will drive just as much without breaking; and up to the breaking point it will be by far the better belt of the two, so long as the pulley has not so much crown as to render it impossible for the belt to bed down well upon its face.

#### A Model Gossamer Factory.

**I**N the thriving town of Hudson, on the Massachusetts Central road, about twenty miles from Boston, are situated the works of the Goodyear Gossamer Co., a concern that, although comparatively new in the field, are to-day the largest producers of gossamer clothing in the United States. The plant is a new one, and not only beautifully laid out, but so arranged that the work can be done in the most effective manner and with the least friction. Beginning with the seat of power, which is the engine-room, there is a fine Harris-Corliss engine of eighty horse power, and adjoining this the boiler-room, which is supplied with all the latest appliances in the way of pumps, damper regulators, etc., etc. The room where the washing and compounding is done atjoins the engine-room, and has a floor space of 80x40 feet. Next to the mill-room is the churn-room, where the compounded rubber is put into galvanized iron churns and stirred with benzine until it is in the shape of a thin soup. This is then drawn off from the churns and taken to the spreading-room, which at this factory is a leading feature. The process of spreading gossamer cloth is always attended with a great deal of danger, for the cloth, in running rapidly over the rollers and receiving its coat of dissolved rubber (perhaps it would be better to say its coats of dissolved rubber, for each web of cloth receives from eight to thirty coats) generates a certain amount of frictional electricity which oftentimes starts a spark, and away goes the benzine in a sudden burst of flame. As it is impossible to guard against this absolutely, the spreading-room at this factory is made entirely fire-proof. The floor is of cement, the walls are of brick, and the roof is a double thickness of iron, so arranged that the fumes of the naphtha are immediately drawn away and fresh air constantly supplied to the workers. In this room, aside from the spreading machines, is an English doughing machine for double texture goods that is the largest in the United States, and was built in England expressly for this mill. Adjoining the spreading-room is a small fire-proof building where the goods are kept that are to be handed to the spreaders and where they are taken immediately after they are spreaded, so that in case a fire occurs in the spreading-room no stock can be damaged except such as is at the moment on the machine.

The main building is a beauty, 130x50 feet, the lower floor largely taken up by an immense stock-room and the shipping department, while in the front are the commodious offices. These offices are about as comfortable as can be imagined, and

are divided into three apartments; one in which the book-keepers are to be seen hard at work; the second, the general business office containing the desks of the two partners in the concern, Messrs. Apsley & Coffin; and the third, separated from the other two by an elegant portiere, is a specially luxurious den where particular friends and would-be customers are invited, and where questions of special moment are discussed. The offices are very handsomely finished in Norway pine, have a fireplace, and breathe forth an atmosphere of warmth and cheerfulness that in nowise hinders the progress of business.

In the second story of this building is the immense work-room, where are hundreds of girls seated at sewing-machines, making up the particular garments for which this company have achieved such high reputation. This room is exceedingly light and airy, and a peculiar feature of it is that it is absolutely unobstructed by posts, the roof being supported by heavy timbers and iron rods, and it is said to be one of the largest single rooms covered by a truss roof in the State.

One thing in particular for which this company is noted is the production of the India stripe, which has been exceedingly popular, adding a new beauty to gossamer goods, and giving the Goodyear Gossamer Co. a wonderful lead in its sales. In walking around the eight buildings where these goods are manu-

factured one notices across the broad roadway, which the towns-people have named Apsley Street, a great field full of solarizing tables, which are well supplemented by the new and improved heaters that the company have just put in building No. 8. A handsome row of tenement houses, with none of the barren, comfortless look that the tenement house usually bears, front another portion of Apsley Street, where are housed some of the best of the company's help. On the hill overlooking the factory, a new house is rapidly going up for the superintendent. It is

worth while to note, that from the first the help in this factory have taken a decided interest in the work,—that there has been no trouble with them in any way, and that in their light, pleasant, attractive quarters, with the good treatment that they receive, the amount of work done is surprising and the damaged goods very few; all of which points a moral.

SOME public contracts open to British rubber manufacturers are not to be sneezed at. Thus the Metropolitan Police force of London comprising nearly 14,000 men, exclusive of the Thames and water police, are all supplied with waterproof capes, armlets and other goods. At a recent letting of a contract for these supplies for a new term of five years, the award was made to Messrs. Abbott, Anderson & Abbott, of London, who had already held the contract continuously for twenty-two years. It is also stated that this firm also hold the contract for all the waterproof goods required for the immense body of men in the English postal service.

AMONG other evils in the English Patent Office system, the *India Rubber and Gutta-Percha Trades Journal* complains of the want of an efficient staff of searchers, by reason of which it is a common occurrence to see old patents patented over again



PLANT OF THE GOODYEAR GOSSAMER CO., HUDSON, MASS.

## Current Gleanings.

BY LIGHTNING ARRESTER.

THE question of good insulation for overhead wires for light and power circuits is one frequently discussed, although lately it has been somewhat overshadowed by the much more important subject of underground work which commands so much attention nowadays. Mr. Henry A. Reed, of this city, has recently published an article drawing attention to the fact that if good material is used and proper care exercised in putting in place, high tension currents can be conveyed overhead with equal safety as though underground wires were employed, and of course with far less expense. In support of this he cites some practical examples. An overhead circuit belonging to the Municipal Electric Light Company, of Brooklyn, N. Y., containing about eight miles of Bishop "white core" wire strung on the elevated railway structure, when tested recently at about noon on a bright, warm day, gave an insulation of about one megohm with twenty-three transformers in circuit. On the same day an overhead circuit of three and one-half miles of overhead wire without transformers was tested and found to have a total insulation resistance of 353 megohms, or over 1200 megohms per mile. The tests were made by Mr. Herbert Webb, of the electrical staff of the Metropolitan Telephone Company. Such excellent results as these not only show that good insulating material was used on the wire, but that careful work was done in the construction of the lines. This is a very important point in placing insulated wire overhead, as if the wire is much stretched or kinked the insulation will inevitably be damaged.

Another instance of high insulation on overhead circuits is supplied by the Highland Park (Ill.) Electric Light Company, who have some fifteen miles of overhead wire in their system. All the circuits are run with improved Candee wire. A test made recently, after three days of continuous rain, showed an insulation resistance for the primary circuits of over one megohm. This is a very good showing, especially as the wires run through narrow alleys and in places among trees. The Central Electric Company, of Chicago, handles a lot of the improved Candee wire mentioned above, and reports a continually increasing demand for it. Quite recently an order was received for 12,000 pounds of the wire to be shipped at once, and with such dispatch are such matters arranged in Chicago that the wire was at the freight depot within an hour of the receipt of the order.

A legal decision of interest to companies operating overhead wires was rendered in the Supreme Court of Michigan in the case of *Kraatz vs. the Brush Electric Light Company*. An employé of the company was injured while in the performance of his duty. He was engaged in trimming lamps on a circuit which, by the rules of the company should have been dead at the time he was working on it. As a matter of fact it had come in contact, at a point where the insulation was weak, with a live circuit, and had consequently become charged. It would unquestionably have been negligent for a company to turn current into the circuit on which the employé was at work without notifying him of the fact, and it was equally negligent to permit the circuit to become charged by failing to exercise proper precautions as to the crossing of wires and the insulation, and whether the company or its officers actually knew of the existence of defective insulation or not, the company is bound by the effect of its own neglect and is liable in damages to a workman so injured.

Mr. Patrick B. Delany, of South Orange, N. J., who is a prolific inventor in the field of telegraphy, has now put upon the market an improvement in battery material designed to prevent the annoying "creeping" of salts which is a source of so much trouble to all users of primary batteries. A number of devices have been put forward for the prevention of this fault, but in most cases the creeping goes on just the same. Mr. Delany's patent battery strip consists of a strip of rubber cloth which is secured to the mouth of the battery jar on the inside, by means of a waterproof compound. It offers a mechanical obstruction to the creeping salts which collect beneath the strips and are redissolved in the battery liquid as fresh water is added to the solution to make up for the loss caused by evaporation. A year's test of this device has been made before putting the patent battery strip on the market. At the end of that time the cells tested were as clean on the outside as when first set up. The strip is applicable to all forms of batteries employing glass containing jars and liquid electrolytes. It is easily applied and the price is very moderate; no doubt it will meet with widespread favor.

The enterprising firm of Alexander, Barney and Chapin, the latest addition to New York electrical supply houses, have made an arrangement with the Fibrone Manufacturing Company, also of this city, by which the latter concern will manufacture solely for the A. B. C. firm the various insulating substances controlled by the two parties to the agreement. These substances, which are all materials designed to substitute hard rubber, porcelain, slate, marble, etc., in the manufacture of electrical apparatus, are four in number. The first is Alexite, recently mentioned in these columns, which has already met with a demand exceeding a capacity of the plant originally designed for its production. The second is Plasticon, chiefly used for switch handles and bases; it is made in imitation of woods and marbles, is waterproof and will withstand a high degree of heat. The third, Fibrone, is similar to plasticon, but will stand a much greater heat and can be worked, tapped, drilled and polished to greater advantage. It can also be worked in sheets of any thickness. The fourth is Herculite, which is claimed to be fire, water- and acid-proof, and to have great tensile strength, rendering it adaptable to many special purposes in electrical manufactures. Herculite can be made into sheets as large as ten feet square, being specially suitable for large switchboard bases. Sixteen new hydraulic presses have been added to the plant of the Fibrone Manufacturing Company, and Alexander, Barney and Chapin expect to do a large business in this imposing array of insulating substances.

The Central Electric Company, of Chicago, recently sent out an interesting circular in the shape of a fac-simile letter, with a small piece of okonite wire attached by means of a red ribbon and appropriate seal. The letter reads as follows: "This piece of Okonite wire was placed in our Lumber Exchange, in this city, five years ago, and has been used continuously ever since as part of the electric lighting circuit of the building. The wire was originally stapled to the fire-proofing and plastered over, and, as far as we can see, is as good as ever." The letter is signed by S. G. Cook & Co., lumber merchants of Minneapolis. This novel style of advertising has been quite a success, and the Central Electric Company has received many applications for copies of the circular to be kept as souvenirs. Possibly their stock of Okonite wire may have run rather low on this account.

The Pacific cable scheme moves on apace and is rapidly tak-

ing definite shape. The British war-ship *Egeria* has just concluded her second season's work of surveying the proposed route, or rather of examining the bed of the Pacific in order to find the best route for a cable between Canada and Australia. Last year was spent between Auckland, New Zealand, and the Fiji group. The deepest sounding made south of the Equator was 4530 fathoms (over 5 miles), but unfortunately no sample of the bottom at this enormous depth was recovered, as the wire broke when heaving in. A very extensive survey was made. The total length of cable necessary to stretch from Canada to Australia and New Zealand is estimated to be 8900 miles, and the maximum cost would be \$9,000,000. The length of cable seems very formidable, but as there would be a number of intermediate stations, the longest single section would be about 2700 miles, or very little more than the longest Atlantic cable now working.

It is now being proposed and with much force of argument that the United States Government should participate in the proposed Pacific cable. The President has just urged Congress to take action to prevent the Pacific mail steamers from changing the American terminus of their voyage between Australia and this continent, from San Francisco to Vancouver, British Columbia. Senator John H. Mitchell, of Oregon, now urges Congress to take a hand in the plans for a cable across the Pacific, predicting that the cable will certainly soon be laid, and that if the United States Government holds aloof from the project, it will be laid under British and Canadian auspices, with the Eastern terminus of the line in British Columbia. Men of affairs in the Northwest have special reasons for knowing and appreciating the danger of allowing the ports of British Columbia to gain steamship advantages over the United States' Pacific ports. They have a strong line of argument in the evident social, political, commercial and military value there would be in the establishment of the terminus of the Pacific cable in United States territory.

In the face of this almost pathetic appeal it seems a pity that there is scarcely the slightest chance of the cable being landed on any but British territory. The line will be built with British capital, the interest on which will be guaranteed by the British and Colonial governments; the cable will be made in Great Britain and laid from British ships and by British engineers. Wherefore, unless the United States Government take very prompt and decided action and bestir itself far more energetically than it did when the Atlantic telegraph scheme was bespeaking support and receiving none, it seems less than probable that the American end of the cable will be landed on United States territory while British territory is so easily available. Perhaps if America could take a hand in making and laying the cable the case might be different. But, although most things electrical are made in this country, ocean cables are not, and probably never will be.

A VERY important branch of the rubber industry in England of late has been the manufacture of tires, especially for bicycles. During September twenty-eight new applications for patents for tires were published, and during October there were twenty-five more. Firms which have been engaged in the general manufacture of rubber goods are now adding as a specialty the production of tires.

**BOWERY MERCHANT**—How did that 89 cent gossamer get spoiled?

**CLERK**—I put it outside the door to show and a shower came on.—*Town Topics*.

### The New Grinnell Sprinkler.

THE Grinnell Sprinkler with its record of having extinguished 850 fires, is an apparatus which is most favorably known to rubber manufacturers. Many of the largest rubber mills in the country are equipped with this system, and find it almost infallible in its operation. For some portions of the mill where corrosive gases are constantly at work a new sprinkler has been devised, its excellencies being set forth in the following description:

In its general outline the new Grinnell head does not differ from the pattern now so extensively installed in the United States and foreign countries,—it is smaller than the original head. Its actual size and appearance is shown in figure 1. It will be noticed that the combination of levers used in the original head to hold the valve is done away with, and a soldered strut which is composed of three pieces, directly holds the valve closed against its seat. The valve is an entirely new departure in automatic sprinkler construction, it being a hemispherical disc of glass. The experience of all sprinkler manufacturers shows that there is a recognized difficulty in constructing the valves of sprinklers so as to prevent them from sticking to their seats, by reason of corrosion or the adhesion of foreign matter. The glass valve is designed to overcome this.

The flexible valve seat used in the present head is retained, Mr. Grinnell holding that this feature has been demonstrated to be an essential and important feature in automatic sprinkler construction, for the purpose of absolutely preventing leakage.

The deflector of the new head is similar to that of the present head, but smaller. It is rigid, and is set nearly two inches away from the outlet; whereas the deflector of the present head is a part of the valve, and falls away from the outlet when the solder-joint fuses.

Fig. 2 gives a sectional view of the new head, and shows very clearly the application of the glass valve and the flexible valve seat, and the construction of the strut which holds the valve. By an ingenious arrangement of the pieces composing the strut, the principle of the keyed solder-joint used in the present head is maintained, thus reducing the strain on the fusible alloy to a minimum. All the working parts of the new head are made of German silver. The frame is of cast brass. An important feature is that the parts composing the strut which holds the valve, are entirely enveloped in solder; preventing corrosive acids from reaching the metal and



FIG. 1.



FIG. 2.

thus insuring the separation of the parts and the liberation of the valve when the solder fuses.

It is apparent that the new Grinnell head is designed to meet the difficulties which years of experience in the manufacture and use of automatic sprinklers has developed, and more especially in places where they are subjected to corrosion or lodgment of adhesive substances. In all ordinary places where sprinklers are required the present head is constantly doing good service.

The fusible solder being the only portion of the head considered liable to corrosion, a coating will be applied in places where corrosion is especially liable to take place, which is calculated to effectually prevent the action of acids upon the solder. There being no joints or crevices in the new head this can be done without clogging the parts. Manufactured by the Providence Steam and Gas Pipe Co., Providence, R. I.

#### Fire Hose in New York.

**S**ENATOR FASSETT'S investigating committee looked lately into the fire hose question as far as it concerned the city of New York. The first witness was George Dodge, President of the Mineralized Rubber Company. He testified that he had never done any business with the Fire Dept., although he had tried. His company's hose was in use in several cities. He had made a bid, accompanying it with the bonds and three years' guarantee, for the work of this city, but the Department would not even submit his hose to a trial. He had offered it for 15 cents a foot less than the price paid by the city. He said he knew the city was paying \$1 a foot for hose which was sold to other cities for 85 cents a foot.

In reply to questions asked by Mr. Finlay, who cross-examined him for the Department, Mr. Dodge denied that only two lengths of hose were furnished for trial. The Department could have had any length it chose to ask. The hose sold the city for \$1 per foot by the Gutta Percha and Rubber Manufacturing Company can be made, he said, for 50 cents. He had made a bid to supply the United States Government with the same quality of hose at 54 cents, and had been underbid.

Mr. William H. Wadsworth, Secretary of the Mineralized Rubber Company, testified to having given the bid, the guarantee and the thirty-thousand-dollar certified check, personally to Mr. Purroy, who refused to open it and handed it back. He had some difficulty in getting the blanks.

Amadee Spadone, President of the Gutta Percha and Rubber Company, testified his company had never sold the Maltese brand of hose used in New York for less than \$1 a foot. The hose sold to New York was a special make in order to comply with the specifications, and was not sold to any other town. Other places mentioned had bought hose, but not the New York hose. It was not true, as stated by Mr. Dodge, that the Excelsior hose could be made for 50 cents a foot.

"Dodge," said Mr. Spadone, "is only a dealer, and he doesn't know what it costs to make our hose. He can't play his 'dodge' on me."

As long ago as 1837 rubber-covered umbrellas were made by the Roxbury Rubber Company. They were hand heavy and unwieldy, and the unvulcanized gum was so adhesive that when they were shut up and warmed they could not be opened again. After the discovery of vulcanization, however, rubber umbrellas were made with better success, indeed to-day they may occasionally be seen, although not in general use, because very little taste seems to be shown in their make-up thus far.

#### Every-day Work in the Factory.

BY NICK R. AUGUR.

**A**S the boy who goes into the country bank gets hold of the principles of banking better than the youth who enters a huge banking establishment and is kept at one kind of work year in and year out, so the worker in a small rubber factory is more apt to have a general knowledge than he who enters some of the larger concerns. This was brought quite clearly before me the other day when I dropped into a little factory where almost everything in the line of soft rubber work is undertaken, and where, in a small way, money is made.

The son of the proprietor, a bright young fellow of twenty or thereabouts, was hard at work on a curious looking rubber arrangement that seemed to puzzle him more than a little.

"What is it for?" I asked, interestedly.

"I don't know, I'm sure, unless it is simply to bother a rubber manufacturer," he replied, with considerable disgust in his tone. "This has been to two or three large mills and they would not bother with it, claimed they couldn't make it, though of course they could if they wished to. Now it has come to me. I shall spend so much time studying over it and fooling with it that there won't be any profit at all unless we get a tremendous order for them, and the worst of it is, almost all of these things that take up so much time and patience and thought, are for some cranky inventor whose ideas are never practical, and who never comes the second time with the big order that he indicates will be forthcoming if we make success with our end of the work."

The article that he had was to be moulded, and it was to be in shape something like an ordinary sugar bowl with a closed top, three tubes extending from the sides, while on the end of two of the tubes were small hollow balls.

"Any man who is a good bulb maker ought to be able to get that thing up," I remarked.

"Well, now I'm not so sure of that," was his reply. "I don't profess to be a remarkably good bulb maker, but I do think I have a faculty for making things the first time so that they come out good; but I have damaged four of these infernal things already, and I don't know how many more I shall spoil before I get a perfect one."

"Let me see the damaged ones," I asked.

Pulling a box from under the table, he showed me the four that had proved failures. One of them had the well-known and troublesome powder crack, that is, the large bulb when in the vulcanizer and swelling out under the pressure of the steam that was within it, had folded over on itself a little, in nowise injuring it, except that when it came out of the mould and was pressed, it showed a deep crease in one side. Two of the others, which were the first two made, had leaked where the tubes joined the bulbs, and the water getting around the outside of the larger bulb, had pitted it so that it was an exceedingly homely piece of work. The fourth would probably have been a good one, but the boy had knocked the clamp off the mould before

it was cool and the result had been a miniature explosion that I trust taught him a lesson.

"I notice," said I to my young friend, "that the tubes that join the bulbs do not appear to have had a wire through them during vulcanization."

"No, they didn't," he said, as if struck by a new thought.

"Well, if you'll pardon my suggesting it, I think you will find it a much easier task to hold the bulbs to the tube ends, and also to have the tube fill the mould, if you will make it a trifle large and have within it a steel wire."

The hint was taken very gracefully and together we made up another of the curious arrangements, and after carefully dusting it with French talc, put it into the mould. I dropped in again that evening after the heat was out and found that our combined efforts had produced a perfect article, and that it was even then having the overflow trimmed from the tubes ready for shipment to the inventor.

This little incident brought back very vividly to me the time when, as a boy, I used to sit before a zinc-covered table and make rubber bulbs. What an infinite variety of bulbs we had, and what a little trade of itself it was to manufacture them! The stock, which was usually white, was run to just such a gauge, and sometimes when made for the cheaper sort of bulbs was run with a lining of some cheaper stock and a coating of a beautiful white costly stock. After the running onto sheets of heavy duck prepared for the bulb stock and the subsequent hanging of these sheets on rolls until the rubber was cooled, would come the stripping from off the apron. In warm weather this stripping was far from an easy task, and was one of the lines of work in which the peculiar knack of pressing on the stock without stretching it was something that was acquired only after constant practice. After the stripping, the stock went up into the cutting-room where, between cutting boards, the cutters, with the keenest sort of knives, cut out the portions that were to be knit into the bulb shape. For almost all kinds of bulbs each piece had to be cut out by hand, as the edges must be carefully skived in order that they might knit together easily and preserve the general contour even while the goods were unvulcanized. For ordinary syringe bulbs, single and double neck, with bodies and without, two pieces were sufficient; for breast pumps, three pieces were necessary, and for such work as hollow balls, particularly atomizer balls, the three pieces necessary for each were cut out with dies. Aside from the regular run of bulbs of this kind, were some huge ones that were many times larger than the ordinary syringe bulb, even running up to the size of the big rubber horse bottles, all of which, however, were made on the same general principle. The pieces being cut, they were next taken to the cementers, where the very finest quality of white rubber cement that could be secured was brushed along on the skived edges and the pieces were then placed upon zinc covered boards, which in turn were laid in little steam cupboards that the solvent might be dried out of the cement and the rubber softened, so that it would be easier to stick it together. The ordinary solvent used in the cement was benzine. For particular work a special grade of camphene used to be used that was slower in drying out and that

very rarely caused the tiny blisters on the joined edges. When the bulb pieces were in proper condition, a pair would be taken out and placed before a bulb maker, who, taking up one piece, would place an iron pin at the neck end, and putting the second piece opposite it, would roll the two pieces together around the pin, thus forming the neck of the bulb. The sides would then be seamed up with thumb and forefinger until it was all nicely jointed with the exception of a small orifice. Through this orifice would be poured a little water. The bulb would then be closed up further still and the lips applied to the tiny hole left, a little air blown in to inflate the bulb and round it out, and behold it was ready for the mould. Placed by the hundred in boxes and dusted with French talc, these partly finished bulbs would now be sent down to the mould room, where the dexterous workers would slip them into the cup-shaped moulds in such a way that there was no chance for powder cracks and that the iron lips of the mould could in no way pinch into the rubber. The two halves of the mould were clamped together and all was ready for the important step of vulcanization. With a heater full of bulbs, the heater-man usually felt considerable responsibility, for nothing was easier than to run the heat a little bit high and to find that he had burned the goods. It was therefore a man, usually, of careful judgment and absolute accuracy who was chosen to run the heat. Turning on the steam into the huge hollow shells that held the bulb moulds and opening the drip wide, he first made the steam drive out the cold air. Then, watching thermometer and steam-gauge, little by little he carried the heat up to the required point and carefully held it there until the right time had elapsed. Then shutting the inlet-valve, he opened the drip wide, and the steam rushed out with a hissing and screaming that was almost deafening, while the mould-makers, who stood by ready to empty the moulds, began at once to open the heater in spite of the shrieking steam and the pressure that had hardly begun to drop.

To-day the heater-man is a necessity, but with the new and valuable appliances that are put upon vulcanizers, he is not required to assume so much responsibility. It is interesting to see how little by little in all of the various rubber factories individual judgment as to the heat required for various stocks, as to the length of time of cure, as to following the heat in its continual rise in the vulcanizer, is being done away with, and human judgment is replaced by mechanical record. It has come to be so that when the superintendent sits in his office he can have a dial on the wall by the side of him that will tell him exactly what heat and what pressure are on his vulcanizers. Not only that, but when the superintendent is sleeping the sleep of the just, a little instrument in his office is recording the movements of his watchmen about the factory, and if the night heat is being run, will tell him whether that watchman turns the valve at the proper time. If he is ten or fifteen minutes late, there it is registered for the superintendent to see in the morning.

We didn't have those things when I was a boy,—and I was going to say that I am glad of it. I, however, will forbear, because it comes to me suddenly what an enormous

amount of guess-work has been in the rubber business,—guessing at heats, guessing at compounds, guessing at results,—and getting most awfully stuck. I therefore must say that I hail with delight the new scientific appliances that are being brought to the aid of the rubber men, and while bulb making will probably be about as I have outlined it to the end, there will, from time to time, be little innovations brought in and short cuts reached that as they come we hope will be chronicled in this column.

#### Organizations Among Rubber Workers.

THAT growing association known as the American Federation of Labor, in five years' time has formed thousands of "Unions" in all parts of the United States, and representing almost every trade that can be mentioned. In the recent report of the Massachusetts State Branch is to be found much of interest to the rubber man. Under the chapter heading "Rubber Workers" the following is printed :

"The writer cannot recall that any attempt to organize the trade was made previous to 1884, and no Union of the craft was then in existence. In that year the spirit of unionism began to manifest itself, not only in the rubber trade, but in others as well, and when the great tidal-wave of organization in the Knights of Labor swept over the United States from Maine to California, rubber-workers were gathered in with the rest, and when the membership of the K. of L. reached its highest point, the rubber compared favorably with others, all but two of the principal shops in the United States being organized. Those who gave the matter the most attention, saw the necessity of having a National Trades Assembly, and several conventions were held for that purpose by representatives from the various Local Assemblies. E. S. Blaine, then a member of L. A., 3982, K. of L., afterward District Secretary-Treasurer of District Assembly 30, voiced the sentiments of nearly all rubber-workers in the resolution presented by him to the convention of D. A. 30, held in Boston, Mass., April 19 and 20, 1886;

"Resolved, that District Assembly No. 30, endorse the formation of a National Trades Assembly of Rubber Workers. Mr. Blaine and others spoke in favor, Geo. E. McNeill and Chas. H. Litchman against. A letter was read from A. A. Carlton in opposition. The resolution was defeated, and from that time the trade decreased, so far as the organization was concerned, until it was a thing of the past. Various efforts were made from time to time to arouse interest in organizing the trade, but were fruitless, and not until about a year ago, did those who had the matter at heart succeed in establishing a Union of the trade, under the protecting wing of the American Federation of Labor, both State and National. At the special session of the Massachusetts State Branch a small sum of money was appropriated to assist in organizing the trade. As the result to-day there are eight unions in good working order, and the seed is planted for more, and in the near future will ripen and bear fruit. There is no need to hurry. Go slow, and discipline and educate your members. Be conservative; and above all; 'In times of peace prepare for war,' that you may always be prepared to do all in your power (within the bounds of law), to protect your situation.

"The prospects are that before another meeting of the State Branch, the rubber-workers will be organized as a National

Rubber Union, attached to the parent body. In that event, we shall expect every rubber-worker in the United States to join hands with us in trying to elevate our craft.

"Readers of this article will bear in mind, that to form a Union, it only requires seven members. The charter of affiliation with the American Federation of Labor costs \$5 equally divided between the applicants. Any further information can be obtained by applying to the president of the State Branch, Geo. W. Clark, 7 Medford St., Chelsea, Mass., or to F. K. Foster, secretary, 134 Harrison Ave., Boston, Mass., who will put you in communication with an organizer."

The Rubber Workers Unions organized in 1890 were No. 4053, organized Feb. 26; No. 4088, organized March 25; No. 5018, organized May 6; No. 5076, organized May 31; No. 5066, organized May 23; No. 5136, organized June 30.

From what factories they were recruited the report does not state, but from the financial report we find dues paid by eight rubber-workers unions and expenses charged as follows: March 12, 1890, organizing Rubber Workers, South Framingham No. 4053; April 2, 1890, rent of hall in Chelsea to organize Rubber Workers; May 14, organizing Rubber Workers in Stoughton; June 12, 1890, organizing Rubber Workers Union No. 5076, Cambridgeport; August 8, expenses Rubber Workers Union No. 5136, Mattapan.

#### Tuno to the Front.

THE Western papers are publishing the following squib, which must be a comfort to the rubber men, especially when they consider what a treacherous gum Tuno usually is:

"There is no danger of the supply of rubber falling short, for the Indian Government has been at great expense during the last few years in planting forests of the rubber tree. But if it should, an excellent substitute will be found in the tuno tree of Nicaragua. It is a tree somewhat resembling the rubber, and grows in great forests in several parts of Central America. The sap yields a rubber whiter than that from the rubber tree, fully as elastic and somewhat more solid. It has not yet been made an article of commerce save on a very limited scale, but the trees producing it are so much more numerous than those which yield rubber, and the places where they grow are so much more convenient to the lines of transportation that when it does come into use as a substitute for the India rubber it will be furnished at less than half the cost."

#### The Best Sidewalk in the World.

THERE is a length of rubber sidewalk in Edinburgh that is the finest sidewalk in the world. It is about 25 feet long, and the sidewalk is about 8 feet wide. The rubber is fluted so as to allow the water to run off quickly, and the surface is the most comfortable to walk on that can well be imagined. You can't slip if you try, and there is a spring and a "give" that is most restful to the tired man. It was laid as an advertisement by a shopkeeper who sells "mackintoshes" and "goloshes," as he calls rubber coats and rubbers, and although the expense must have been heavy, it must have yielded good results. The rubber is 2 inches thick, and was laid on a 4-inch bed of concrete. In four years it has shown no appreciable signs of wear, but mischievous boys have cut it in places.

## Recent Rubber Patents.

No. 437,737.—Stuffing-Box Packing; Richard Walsh, Philadelphia, Pa. A stuffing-box packing consisting of a vulcanized India rubber strip enveloped in a fibrous covering adapted to absorb and retain lubricants, in combination with a flat, ductile metallic facing-strip bound to the envelope by a fibrous strip, and the whole saturated with a lubricant.

No. 437,779.—Diving Armor; Arthur Hemenger, Algonac, Mich. A combination in which the head, chest, body, leg, boot and shoe sections are pivotally connected together, with a water-proof covering for the whole and an air inlet pipe opening into the chest section, and a discharge pipe leading from the head section to the surface of the water.

No. 437,847.—Door Check; Charles J. Kiernan, Newark, N. J. A door stop consisting of a portion having a screw-headed aperture, or socket therein, and a smaller aperture extending from the base of the socket to the outer end of the said portion, a rubber cushion inserted through the apertures having a screw-headed extension whereby the same may be firmly joined to and the said cushion be firmly held in place, and means for securing the stop in position for use.

No. 437,907.—Rubber Boot; Emmett A. Saunders, Naugatuck, Conn. A boot or shoe, which comprises a foot portion made of materials such as are usually employed in the manufacture of vulcanized rubber foot-wear,—such, for example, as rubber compound or cloth and rubber combined,—a separate leg portion, composed of a suitably strong and durable material containing no rubber, but at the same time possessing sufficient rigidity to maintain itself like the ordinary heavy rubber boot-leg in an upright or distended condition when not in actual use, and means by which such separately and differently made foot and leg portions are united in a strong, durable and water-tight manner.

No. 437,913.—Covering for Electric Wire; David Brooks, Jr., Philadelphia, Pa. A cable having a coating with a double layer of tin-foil and an adhesive oil or substance between the said layers, permitting the layers to move one on the other without separating or breaking joints.

No. 438,179.—Advertising Device; George Quarrie, New York. An advertising device consisting of a foot piece, supporting a pair of rotary rubber printing blocks carrying printing characters on their lateral faces, in combination with an inking pad and cleaning brush for each block and mechanism for rotating the blocks, as the pedestrian advances step by step.

No. 438,309.—Method of Insulating Electrical Conductors; Thomas A. Edison, Llewellyn Park, N. J. A method of insulating electrical wires which consists in displacing the hydrogen contained in balata or similar material by a halogen, and applying such halogenized material to the conductor.

No. 438,311.—Composition of Matter for Making Cells or Retaining Vessels; Oscar A. Enholm, New York. The composition here described consists of asbestos mineral wax, gutta percha and a hardening medium.

No. 438,312.—Acid-proof Retaining-Vessel. Same inventor. This vessel is composed of the compounds given above.

No. 438,313.—Composition for Cells or Retaining-Vessels. Same inventor. The compound used is that described above.

No. 438,383.—Wheel; Albert H. Overman, Springfield, Mass. The combination of a rubber tire having a flat base, of a wheel rim having a flat tread provided with one or more depressions for the tire to expand into.

No. 438,622.—Fountain Marking Brush; John B. Harris, Eutaw, Ala. In a fountain marking-brush, the combination of a barrel, a reservoir-bulb removably secured thereto, a piston rod located in said barrel and a brush-bit arranged to be removably connected to the piston rod.

No. 438,628.—Portable Bath-Tub; Erastus F. Lafferty, Indiana, Pa. In a bath-tub, the combination with a frame and a flexible tube secured thereto and a series of pivotally-connected legs hinged to the said frame, and an extensible locking device connecting the series with frame.

No. 438,698.—Insulating Composition; Anthony E. Menuez, St. Paul, Minn. A composition consisting of powdered mineral wool, powdered graphite or hardening clay, asbestos fibre and liquid silicate of soda.

No. 438,709.—Bottle-Stopper; William Painter, Baltimore, Md. In combination with a bottle, a cup-shaped stopper of flexible material seated in the mouth thereof with its convex side inward and its concave side outward, and provided at or near its centre with a projection whereby it may be retroverted and turned from the bottle.

No. 438,798.—Tobacco Pouch; James Burbridge, Tottingham, England. An India rubber tobacco pouch consisting of a flat bag portion provided with a twisted neck opening in one of its flattened faces and a pocket on one side of the bag into which the bag may be folded to enclose the neck.

No. 438,836.—Hose; Frederick G. Botsford, Erie, Penn. A compound hydraulic hose consisting of an external flexible tube and an internal lining of sheet-cork rolled into tubular form and applied to the tube.

No. 438,923.—Securing Device for Overshoes; James L. Heffernan, Newcomb, Tenn. In a securing device for overshoes, a loop provided with a series of rings and axles pivotally secured within plates and actuated by a suitably arranged spring within said plates, and an elastic band secured to the loop and the overshoe.

No. 438,931.—Footbath; Mary L. W. Martinot, New York. A foot-bath receptacle constructed of a water-proof material approximating the form of a foot and provided with a roughened inner surface.

No. 438,937.—Nursing Bottle; James W. McKinnon, New York. As an improved article of manufacture, a nursing bottle consisting of a round, flattened body having a nipple receiving neck, a large circular opening in its upper side, an annular groove or channel in the upper side of the body beyond and concentric with the said opening and having one vertical wall screw-threaded, a gasket on the bottom of the said groove or channel, and a circular series of channels or corrugations on its outer face.

No. 438,980.—Syringe; Henry C. Barker, Kansas City, Mo. In a syringe, the combination of a nozzle, and oval frame surrounding the nozzle, return-bend in the frame, a cone-shaped point secured to the end of the frame, said point engaging in an opening in the end of the nozzle, and means for securing the frame to the nozzle as described.

No. 438,998.—Manufacture of Porous Sheets or Surfaces for the Absorption of Liquids; Frederick H. Glew, London, England. A porous sheet or surface for absorbing liquids and gases, consisting of a water-proof base-sheet studded with porous absorbent granules stuck to the water-proof base-sheet and separated from each other by

intervening spaces to form separate and distinct projections.

No. 439,103.—Waterproof Garment; Mary L. Brown, Erie, Penn. The combination with an outer garment, of a pair of depending straps attached about midway of their length to the inside of the garment at or near the shoulder, said straps having fasteners thereon and means whereby they may be lengthened or shortened, and a belt secured to the strap and also to the inside of the waist.

No. 439,137.—Process of Vulcanizing Rubber; Frank G. Fowler, Bridgeport, Conn. The process of vulcanizing rubber or other analogous substances, which consists in separating the gases from the water before it is used to produce steam, and then passing the steam all freed from gases into the vulcanizer, whereby the same is maintained at a uniform temperature in all its parts during the process of vulcanization and the goods cured alike and rendered homogeneous in quality.

No. 439,297.—Toy; Herrman Heyder, Reichthal, Germany. Claim here is the combination of a handle with a string, a block and a perforated elastic ball adapted to be slipped over the block.

No. 439,375.—Elastic Circlet; Gilbert H. Blakesley, Bristol, Conn. A circlet composed of a section of elastic fibre-covered stock, a two-arm clasp the arms whereof respectively bind the rubber and cover together at the ends of the section of stock, and a trimming enclosing the said clasp, the fibrous covering being loose around it.

No. 439,377.—Inner sole; Joseph C. Blum, Towanda, Pa. As an improved article of manufacture, an inner sole consisting of a bottom layer of waterproof fabric, a leather-board or pasteboard sole, having two diamond-shape excisions between common vertical planes, and disposed equidistantly from a longitudinal median line, several intermediate layers of cotton-batting and a top layer of felt or leather.

No. 439,451.—Method of Manufacturing Hollow Articles from Pyroxyline; Joseph D. Ward, Zylonite, Mass. The method described is of manufacturing hollow articles from zylonite or other pyroxyline compounds, which consist in stretching a tube of the material upon a mandrel, turning the surface of the tube and shaping it into the desired form by drawing it over a removable shaping mandrel or core conformed to the shape of the finished article.

No. 439,779.—Pedal-Bar for Velocipedes; Montraville Hoyt, Jamaica, N. Y. As a new article of manufacture, a rubber bearing-bar for velocipede-pedals of triangular form in cross-section and having three rounded edges and three slightly concave bearing-faces.

No. 439,796.—Insulating Composition; Turner D. Bottome, Hoosick, N. Y. A composition for making moulded or pressed electrical insulators, consisting of a combination of orthosilicic acid and silicon dioxide incorporated together.

No. 439,909.—Rubber Shoe Attachment; John Teggart, San Diego, Cal. A band having a loop secured to one end thereof, in combination with a section secured to the opposite end, and having the guard or tongue and the section having the hook end adapted to engage the hook or loop on the opposite end of the band, said section being journaled on the other section and on opposite sides of the guard or tongue.

No. 440,395.—Method of Manufacturing Insulating-Tubing for Electric Conducting-Wires; Henry B. Cobb, Wilming-

ton, Del. The method of manufacturing insulating-tubing for electric wires, which consists in moulding upon the tubing while in a soft condition a continuous covering of metal, vulcanizing the soft tubing inside of its metal covering, and stripping the metal from the vulcanized tubing.

No. 440,033.—Hose Machine; Benjamin Hershey, Erie, Pa. In an apparatus for forming the section of canvas-rubber hose, the combination, with a support of a bolt-roller carriage adapted to travel thereon, having a bolt-roll arranged therein, which is adapted to unreel the strip of rubber as the carriage moves, said carriage having also a driven roll which applies a non-adhesive material to the rubber, and provided also with a roll adapted to apply a solvent to the lap or series of spring-erected standards having supports for said rubber strip in the line of travel of the bolt-roller carriage.

No. 440,148.—Overshoe-Securer; John L. Gourley, Tarentum, Pa. A flexible strap carrying on one end a clasp with a body and prongs, and on the other end a hook with side arms, in combination with an eye for the purpose of securing an overshoe to the footwear over which it is worn.

No. 440,226.—Machine for Stripping Rubber Goods; Sylvester W. Guthrie, Racine, Wis. In a machine for stripping rubber goods, the combination with a standard provided with wings having grooves formed therein, the scraper supported by standards, and the pivotal adjustable arms, also supported by standards, of a slotted plate supported upon said arms and adapted to receive the striping material and to operate in conjunction with said scraper to apply such material to the fabric.

No. 440,391.—Insulating Composition; Frederick E. Blaisdell, Camden, N. J. An insulating composition for electric and other purposes, composed of asbestos, clay and a flux as feldspar or borax.

THE *Chicago Inter-Ocean* thus speaks of the Chicago Rubber Clothing Co.: This company is engaged in the making of ladies' gossamers, cloaks, mackintoshes and rubber clothing. It was originally incorporated in Illinois, and operations were carried on in Chicago and Grand Crossing, Ill. In 1886 the company was organized in Wisconsin, and the works were erected on its ground covering four acres in Racine. The main building is 200x40 feet and of brick. The motive power is furnished by one Atlas automatic engine of 150 horse-power. There are six mills and a calender weighing 65,000 pounds in the machinery room, while the company employs, altogether, over 200 people. It makes a complete line of heavy rubber clothing in the cheaper grades as well as the higher priced. It also makes mackintoshes for men's and women's wear in the highest grades of silk and woolen fabrics of foreign manufacture, as well as the cheaper American; miner's white coats, white goods, air goods, and also does some mould and press work. Its business extends all over the United States and is growing with great rapidity. The officers of the company are: L. S. Blake, president; S. V. Laughton, secretary; H. J. Miller, treasurer, and G. H. Laughton, manager.

IN the new fortifications which are to be erected at Fort Warren, in Boston harbor, is to be a 14½ ton gun, which will have a six-mile range and throw a shell weighing 250 pounds. Besides the air cushions that it will be furnished with, it is to have heavy rubber buffers to overcome the recoil.

## An India Rubber Plaster.

WHO first conceived the idea of making an adhesive and healing plaster with India rubber as a component part is not clearly recorded. Tradition has it that Horace Day (1839) in his little shop on Dennis Street, New Brunswick, N. J., found in boiling up one of his "messes" of rubber, turpentine, lead and gums, that whatever it might not do, when spread on cloth it would stick to the skin "like a brother," and the rejected waterproof cloth found favor in the neighborhood as plaster with marvellous properties. In 1845, in connection with William H. Shecut, he obtained letters patent for "an improvement in adhesive plasters," consisting of a mixture of rubber dissolved in turpentine, then combined with pitch, cayenne pepper, litharge, and spread on cloth, dried eight or ten days, then cut with minute holes (constituting the first porous plaster). To prevent the plasters sticking together he dusted them with soapstone. This was the beginning of the plaster making art as it is practised to-day, the combination of rubber with gums and drugs, and making the plasters porous. They, however, never succeeded in making any plasters. Ten years later one Dr. Allcock and Benjamin Brandreth (of Brandreth Pills fame) were laboring among the New Brunswick rubber manufacturers to get their plasters spread so that they would not only stick, but sell, and after a long struggle Col. John W. Newall, then superintendent of the American Carriage Cloth Company, succeeded in spreading them, and thus was evolved "Allcock's Porous Plasters." It is worth noting that the machinery used in spreading them was made by Elijah Kelly, whose descendants still make this class of machinery, and that in recent years New Brunswick has developed a plaster industry probably the largest in the world. In fact, virtually all the plasters used in the world are made in New Jersey. From the birth of Allcock's plasters until 1874 no progress or change was made in the art, and no pharmacopeial or medicinal plasters were made in rubber combination. At this time Mr. Robert W. Johnson became imbued with the idea that all plasters for surgical and medicinal use could be made with a rubber base, and be a great improvement. Not knowing the experience of the first experimenters, nor anything of the art of grinding rubber, he commenced by dissolving the rubber in benzine, and worked upon this method for two years, only to find that the drugs required to be used were not compatible with rubber when used with a solvent, and that his products were useless and worthless. He then commenced to solve the problem of how to combine the rubber and gums without the aid of a solvent, and only after a long time was able to get a plastic and adhesive mass. Then each change in combination of drugs presented new difficulties. When mechanical troubles were overcome decomposition would take place. When they were made stable as regards atmosphere and climate, it would be found that they had no healing action, so it was not until 1880 that anything like a line of pharmacopeial plasters was made and marketed with a rubber base. In 1887 Mr. Johnson retired from the old firm of Seabury & John-

son, and united with Johnson & Johnson, established a factory in New Brunswick, N. J.

Rubber Plasters made by the Benzine process rapidly decompose, and most drugs have no remedial value when so combined. They are now made by a process familiar to most rubber workers, viz.: the crude rubber being first ground with water, dried thoroughly, then ground until the proper plasticity is obtained. In this grinding no little care and skill are required. Too much or too little power, the slightest elevation or lowering of temperature, will render the mass either too sticky or the reverse. The plastic rubber is then combined with gums, pitch, olibanum, etc., and with the proper medicinal agents. Rubber workers who have experimented in making new combinations with rubber can appreciate the difficulties which arise daily in a plaster factory where attempts are made to keep pace with the changing theories of the medicinal profession, and the vagaries of the "new discoverers" who come to plaster makers with their "receipts" to be mixed and spread. A glance in a Plaster Laboratory reveals that combinations are required of nearly all forms of ground roots, bark and herbs, also alcoholic, watery and ethereal extracts of the same, all kinds of gums, oils and resins, metals, such as mercury, iron, zinc, lead, bismuth, sometimes acids and acid salts, iodoform, camphor, menthol, all forms of tar, gums and turpentine resins, balsams, spices, waxes, fats and volatile oils and delicate alkaloids. The Plaster maker's *Materia Medica* is a long and varied list, and each combination requires a different manner of grinding, mixing and calendering, or the batch will be ruined either in its commercial or medicinal virtues, and as a "batch" of, say, belladonna plaster, is worth about three hundred dollars, the maker must have his eyes open, and must also make his mass so that it will stand any climate, as plasters from one spreading are liable to be sent into South America, Alaska, the sea coast or to Africa. The Plasters are calendered on cloth a yard wide, and 120 yards long, run on reels to set in about three hours they are rolled on drums, cut into strips (perforated in some cases), cut into size, then a face and back then put on, cloth and wrapped and packed. The Johnson & Johnson factory has a capacity of spreading 5000 yards per day, equalling about 145,000 porous plasters. The original plaster plant, consisting of a barrel of benzine, a few pounds of rubber and a brush, has been supplanted by machinery worth over a hundred thousand dollars. In plaster making while mechanical excellence is of great importance, still rubber plasters may be so nicely made that the drug will be so enveloped as to give no action. Hence improvements are always in order and sought for, and perfection not to be reached until a given surface of plaster containing a certain amount of drugs will give as definite effect as the drug would if taken internally.

FRED B. KILMER.

New Brunswick, Dec. 5, 1890.

"ARE you going to the milkman's ball?"

"Yes."

"What do you wear on your feet, rubbers or pumps?"—*Puck*.

## Trade Notes.

THE Standard Rubber Co., of Boston, have closed up their New York office at 99 Franklin Street, and will hereafter do all of their travelling and general business from the Boston office.

—The Atlas Chemical Co., of Newtonville, Mass., report that during the year past they have sold more Golden Sulphure of Antimony than ever before, which is as gratifying to them as it is to their customers, particularly when one remembers the trouble that both manufacturer and purchaser have had in the past to get a good sulphure.

—The Boston Gossamer Co. have removed their office from Washington Street to No. 67 Chauncy Street, where they may be found in Room No. 25. The large upper floors of the Washington Street plant which they occupied as making-up departments for their gossamer clothing have been given up, the work being done now at their new plant in Hyde Park.

—It is interesting to note that one engine manufacturer, Wm. A. Harris, the builder of the celebrated Harris-Corliss engines, has supplied to the rubber trade so many engines that their aggregate power would be nearly, if not quite, equal to the power developed by the great falls of the Merrimac at the city of Lawrence.

—The Gould Commercial Co. are out with a very pretty calandar, which is to be seen hanging in the offices of most of the rubber manufacturers. A fine view of the city of Pará, from the water side, adorns the head of the publication.

—The American Electrical Works in Providence, R. I., have started up the rubber plant that they recently purchased, and are now washing, compounding and curing their own rubber.

—The proprietors of the Pulitzer Building must have been very much pleased with the rubber mats furnished them by the Commonwealth Rubber Co., of New York, for the *Sunday World* in return gives the company a column and a half write-up, mentioning the various brands of goods they make and speaking generous words of commendation for the enterprise that has built up so large and profitable a business.

—Two female employés of the American Rubber Co., while returning from work one evening not long since, were killed by an express train at the Fitchburg crossing.

—Mr. A. J. Gordon, of London, who is the English agent for Parker's Rubber Upper Leather-soled boot, is disposing of a great many of them to the managers of the sewer systems of London and Paris. For work of that kind, or for mining, the boot seems to be peculiarly adapted and is selling rapidly. The well-known "Snag Proof" boot, manufactured by the Lambertville Rubber Co., is also being fitted with the leather sole under Mr. Parker's patent, and is proving an excellent seller.

—The United States Gutta Percha Paint Co., of Providence, R. I., have recently fitted up new and elegant offices on the ground floor of their manufacturing plant. The interior is painted with their own durable and glossy paint, the radiators being covered with a golden bronze, the walls being decorated in white and two shades of brown. Taken altogether, with the stained glass windows, the portieres and curtains, and the handsome furnishings, the office is worthy the prosperous concern to whom it belongs.

—J. J. Gilmartin, the genial manager of the Hayward Rubber Store in Providence, R. I., is not only something of a literary man, having been one of the newspaper fraternity in the past, but is to-day a member of the city council.

—The large factories of the Sturtevant Blower Co., at Jamaica Plain, Mass., are running night and day in a desperate endeavor to catch up with orders.

—It is said that King Kalakua is here in this country with the idea of selling his islands to the United States. If, as is rumored, the rubber tree grows on the Sandwich Islands, we would suggest that the Government buy, that the United States may own her own rubber orchards.

—The New England Butt Co., of Providence, R. I., are supplying numbers of rubber manufacturers with braiding machines for the covering of insulated wire.

—Treasurer J. Edwin Davis, of the Boston Woven Hose Co., is the happy father of a fine boy. May he live to grow up as enterprising and as prominent a rubber man as his sire.

—The Safety Insulated Wire Co., of New York, have fitted up new offices which are so cheerful that it is a pleasure to enter them. A prominent feature in the office is the Recording Gauge back of the superintendent's desk, which gives him a constant report of the affairs in the vulcanizing chambers.

—A curious instrument is manufactured by that expert in thermometers, J. F. S. Huddleston of Boston. It is the deep sea thermometer. It is so arranged that it is dropped into the water to any depth, and then, by a process of tripping, is turned upside down. When it registers the heat at the depth required, it is again tripped and brought to the surface.

—The Clifton Manufacturing Co., of Boston, have moved their offices and making-up department from the foot of Sumner Street to 65 Franklin Street, where they are not only much more centrally located in what may be termed the rubber district, but they have far better accommodations for their work. Their present quarters, which they took possession of the 1st of January, consist of three floors on the corner of Franklin and Arch Streets. They have for the offices and workrooms about 12,000 feet of floor space. A portion of the first floor is used for the office of the treasurer and the clerks, while the major part of it is utilized as a large stock room, with every facility for displaying the many styles of garments that the company manufacture. The two floors above, which are light, airy and high-studded are used for the manufacture of the garments, the cloth for which is coated at the factory at Clarendon Hills.

—A report has gone the rounds of the newspapers that quite recently 1700 Grinnell sprinklers were taken out of a rubber shoe factory in New Brunswick, N. J., and another sprinkler substituted for them. In justice to the Grinnell it should be said that the statement is absolutely false. The apparatus that was removed was the old Brown sprinkler, which did not give satisfaction. The record of the Grinnell, however, in the large number of factories it is in, is second to none in the world.

—Treasurer Winans, of the Peerless Rubber Manufacturing Co., has just recovered from an attack of the grippe. We understand that numbers of those who suffered from this malady last season are having it again, and the only precautions we can suggest are that on sloppy days rubber men violate their usual habits and wear rubbers.

—One of the oldest workmen in the rubber trade to-day is a man named English, who works at the Aetna Rubber Mills. He was formerly employed with Hayward at his Woburn factory and helped him in many of his early experiments. Later he worked at the Colchester for a great many years and was one of the valued hands.

—Articles of incorporation of the Manhattan Rubber Company have just been filed with the County Clerk at Riverhead, L. I. This company has leased the works of the Brookhaven Rubber Shoe Company at Setauket. Its managing trustees are Abner H. Angell, of New York; J. W. Elberson, of Setauket, and Edwin Elberson, of New Jersey. Capital stock, \$50,000, in \$100 shares; term of existence fifty years.

—The recent heavy snow storms have evidently made the Pittsburgers nervous, for the *Press* says: There is no truth in the rumor that there is a famine of rubber shoes in the city. Kaufmanns, the clothiers, have over 100,000 pairs alone, and the lively manner in which a score of salesmen handled them out this morning dispelled any fear of inconvenience this community would have been put to had the aforesaid rumor proved to be correct.

—Edward L. Smith, for the past four years in the employ of E. F. Cooley, Lansing, Mich., has resigned his position, and on January 1 took the road for the Stephen Ballard Rubber Co., of New York City. In addition to a general line of mill supplies, Mr. Smith will handle rubber boots, shoes and clothing. His territory will comprise Michigan, Ohio and Indiana, and Northern Minnesota and Wisconsin. He will continue to reside in Lansing.

—The contract for furnishing the fire department of Norfolk, Va., with 1000 feet of rubber hose has been awarded to the Gutta Percha and Rubber Manufacturing Company, of New York.

—Twenty thousand dollars for two weeks' labor is what the hands of the National Rubber Co. of Bristol, R. I., recently received.

—The Easthampton (Mass.) Rubber Thread Co. has declared a dividend of 6 per cent.

—Mr. C. A. Ray, proprietor of the Brockton (Mass.) Rubber Co., is the Brockton agent of the Boston Belting Co., to whom the contract for 3000 feet of hose was given by the city. The contract was placed through Mr. Ray.

—A new company known as the Monarch Water-proof Co., has been organized in Chicago.

—The employés of the L. Candee & Co., who work in the east room of the boot department, have organized themselves into a society to be known as the Bootmakers' Protective Association No. 2. It is the least costly of any similar society to join and the benefits are comparatively the largest. Each one is assessed twenty-five cents a week if any of the other members are sick and two dollars in case of a death. There are no other assessments and no dues. The character of each candidate for the membership is strictly investigated, and if he is found wanting in regard to sobriety and steady habits, he will be informed that he has put himself to useless bother by trying to get in. No labor agitation will be tolerated. This speaks well for the conservation of the workingmen of to-day. The officers are Arthur B. Clonet, president; Fred. J. Eith, vice-president; Frank E. White, secretary.

—The large stockhouse connected with the Summit Rubber Co., at Summit, N. J., was discovered to be on fire about 3 o'clock on Sunday morning. All efforts to extinguish the flames were unavailing. The rolls of cloth which had been covered with a rubber coating and were ready for the cutter, were destroyed. It is said there were over \$7000 worth consumed, which was only partly insured. The fire is thought to be of incendiary origin.

—Henry Werner & Co., of Detroit, Mich., the new rubber store at 121 Jefferson Avenue, are displaying a handsome line of Mackintosh and other rubber garments, toys and novelties. Their line of boots and shoes is very extensive, and they are sole agents for the Meyer and Jersey Rubber factories in that district.

—Wilson & Knox, of Rochester, N. Y., have rented the old Mason mill at the foot of East Bank Street and are now putting it in condition for use. The firm propose to manufacture flexible waterproof garments and coverings, such as coats and caps for men's wear and lap blankets and horse blankets.

—A pair of rubbers sixty years old, and "used in one family all that time," are displayed in a Newburyport, Mass., store window. Why the patient sufferers did not invest in comfortable modern shoes is not explained.

—The Woonsocket Rubber Co. will soon employ 3000 hands in their great mill, the Alice, at Woonsocket, R. I. At present about 1000 hands are employed.

—The new extension to the Okonite mill is delayed by the inability of the Flynt Construction Co. to procure lumber.

—The Sanders Duck and Rubber Co., of St. Louis, Mo., have applied for a certificate of incorporation. They claim a capital of \$35,000 in 350 shares. The shares are held by Geo. W. Sanders, Edward H. Holton and Charles C. Peters.

—In a handsome volume, "The City of Cleveland and its Resources," lately issued, is a fine description of the large plant of the Cleveland Rubber Co. Among other matters it mentions the battery of eight boilers that run the three large engines; the great 80-ton belt presses; and the general line of goods manufactured. A fine picture of L. K. McClymonds, president, also adorns the page.

—The S. W. Pearce Co., of Providence, R. I., have opened a Boston office, which will be pleasant news for the rubber trade, for their starches and flours have gotten a strong hold among the New England manufacturers.

—The Reading (Mass.) Rubber Works are running again, daytime and overtime, trying to make up for the lost time occasioned by the breaking of the gears of their best calender. A provoking part of this delay occurred through the carelessness of one of the foundry men, who, after casting the gear that was so badly needed, hurried it out of the sand and onto a wagon to be taken to the finishing shop. The cold air, striking the heated iron, snapped it as if it had been struck a blow with a hammer and entailed another delay.

—Rubber shoe men say that the production of boots and shoes for the past year has not brought up the average of the past three years to what it was in the three preceding.

—Mr. G. W. Sanders, of G. W. Sanders & Co., St. Louis, Mo., has been spending a week in New York on business.

—Mr. W. Southwick, formerly of the New Brunswick Co., has gone with the Wales Goodyear Co., as selling agent.

—Under date of January 1, 1891, Messrs. W. & A. Bates, of Leicester, England, issue a circular in which they say: "We have the pleasure to inform you that we have this day taken into partnership Mr. Hugh Faulkner, who has acted as our manager for the last 27 years, and Mr. Philip H. Lockhart, who has held our procuration for the last 5 years. The firm will retain its present title of W. & A. Bates."

—The current issue of the St. Louis *Dry Goods Reporter* contains an interesting review of the rubber trade in the Southwest, from which we take the following: The rubber business has developed wonderfully in St. Louis in the past few years, the newest additions to the trade being the American Rubber Co., and the Missouri Rubber Co., the former succeeding Perry, Stearns & Co., and making in all seven exclusive rubber houses located here now. There is here an exclusive hose, belting and mechanical goods concern, while the Missouri, the youngest, but by no means the smallest, has been heretofore dealing exclusively in clothing. Their success in that line has been very encouraging, having started in a very small premises at 716 Lucas Avenue a little over two years ago, and although they now occupy a large floor on the northeast corner of Lucas Avenue and Ninth Street, they are seeking more spacious premises in order to increase their present line and to carry a full line of hose, belting, packing, druggists' sundries, leather jackets and pants, oil clothing, etc.

—Messrs. Loewenthal & Morganstern, of New York, have placed their sole agency for the sale of their goods in the United Kingdom with Messrs. Kramrisch Sgal & Co., of Park Street Works, Greenheys, Manchester, who will henceforth keep on hand a stock of devulcanized rubber.

—During Christmas week the Hodgman Rubber Co. presented to the public one of the finest displays of rubber goods ever seen in Boston, and much credit is due their popular and enterprising young salesman, Mr. William Keyes.

—Mr. Benjamin F. Ellison, of the Boston Belting Co., has lately returned from the West. He is more than gratified at the outlook, having secured an abundance of orders.

—All of the new buildings of the Cleveland Rubber Company, which have been in course of construction during the past year, have now been completed and are under cover and occupied. They now have in place and ready for operation a number of new pieces of valuable machinery, and in every way they are thoroughly equipped to start off in the new year with facilities to do a very large business. It is a noteworthy fact that during each of the past 15 years this company has found it necessary to increase their factory, and now their buildings contain no less than 114,000 sq. feet of floor space. This speaks volumes for the character and quality of their goods. The best of all possible customers is he who deals longest with the firm, and there is but one way to secure that kind, namely: the manufacture of first-class goods.

—The Commonwealth Rubber Company, New York, is just out in a handsomely printed new Catalogue, which reflects credit alike upon its editor and its printers. The convenient size of about 6 by 3 inches is adhered to by them, and from cover to cover it is admirably arranged and most beautifully illustrated. Congratulations, Mr. Randolph.

—Mr. William J. Kelly, the well-known Boston broker in India rubber, has removed his office to No. 145 Milk Street, where all correspondence will reach him hereafter.

—We beg to acknowledge the receipt of a very large and unusually handsome lithographed illustration in the shape of a hanger, of the splendid new building of the Brown-Desnoyers Shoe Company, of St. Louis, Mo. This is perhaps the largest boot and shoe house in all the Southwest, and the volume of trade which they handle in rubber boots and shoes is enormous. We are pleased to note that on one of their splendid plate glass show windows this legend appears: "Headquarters for the Candee Rubber Boots and Shoes."

—Mr. C. J. Roberts, of Roberts Bros., Chicago, accompanied by his salesman, Mr. C. L. Marston, paid a visit to New York and Boston in the early part of the month. He tells us that his brother, Mr. L. C. Roberts, is rapidly regaining his health at San Antonio, Texas.

—The Evansville Rubber Co. have opened a new store at Evansville, Ind., and are carrying a full line of rubber goods of every description. Among the novelties they display is a large-jointed mechanical doll which moves its hands and feet in a very life-like manner. This doll attracted much attention during the holidays and proved a very profitable advertisement.

—Towner & Co. have removed to their new store in the *Appeal* Building, Memphis, Tenn. This firm is one of the leading houses in the Southwest. The junior partner is Mr. Ned Landstreet, formerly of Baltimore, and well known to all in the trade.

—Mr. Frank Hotchkiss, superintendent of the Fairfield Rubber Co., paid a much-delayed visit to friends in New York during the holidays, and reports that his company are very busy on carriage drill, Harral cloth, etc., and are putting in several new boilers and otherwise increasing their plant.

—Messrs. Simpson & Beers point with pride to their record in 1890. Notwithstanding the remarkable stringency in financial circles, every note they sold was paid at maturity, and no renewals were even asked.

—Mr. R. E. Gallaher, of the New York Insulated Wire Co., is taking a well-earned rest among the mountains of North Carolina.

—Mr. Charles Scovill has severed his connection with the American Rubber Co. and is now at his home at Circleville, Ohio. He is contemplating a pleasure trip to California.

—Mr. W. S. Halliday, of the Stoughton Rubber Co., spent the holidays at his home in Buffalo. He reports this to be the largest year's business in his long experience.

—Mr. Warren Salisbury, of W. H. Salisbury, Chicago, has just returned from a business trip to New York and Boston.

—The Gutta Percha and Rubber Manufacturing Co. have removed to their new store at 121 Lake Street, Chicago, occupying four floors and basement. Mr. John R. Brown is the genial and energetic manager. Their now increased facilities will enable them to extend still further their already large trade on Red and Maltese Cross Brands of Fire Hose and mechanical goods.

—Mr. Charles Candee takes charge of the Gutta Percha and Rubber Manufacturing Co.'s new store at Toronto, Ont., handling a full line of mechanical goods and rubber clothing, and the American Co.'s boots and shoes. With Mr. Candee's wide acquaintance in the Dominion, he will no doubt secure a large increase to his trade.

—A fire on December 27 caused a loss of \$1000 on the stock of the New York Standard Rubber Co. at 177 and 179 Grand Street.

—The Big Boy calls and presents his card with the compliments of the season." The above is the principal feature of Mr. T. N. Conrad's (of the Star Rubber Co., Trenton, N. J.) Christmas announcement to the trade together with a life size portrait of the donor.

—Mr. Thomas L. Johnson has engaged in the commission business at 161 La Salle Street, Chicago.

—Mr. G. D. Barr, of the Buffalo Rubber Co., presented each of his fifteen employés with a Christmas turkey, having followed this pleasant custom continuously for the past twenty years. Mr. Barr took the order for the account of the Boston Belting Co. for the Exchange and City Elevator B. mentioned in our last issue.

—The many friends of Mr. W. E. Farrell will be pleased to learn that he is rapidly improving in health. His address is 803 Nineteenth Street, Denver, Col.

—Mr. E. H. Paine and S. Lewis Gillett, of the American Rubber Co., spent Christmas Day at the Auditorium Hotel, Chicago, and have been making a business trip through most of the principal cities.

—Mr. W. H. Brett, of the A. H. Gardner Co., Milwaukee, is the proud possessor of a patent cigar pipe and between puffs manages to say that they have had a large trade on the goods of the Boston Belting Co. for which his company are the local agents.

—The Illinois Rubber Co., of which Messrs. Wilson Haight and Frank Plant are the principal stockholders, report increased retail trade for their store on Madison Street, Chicago.

—Mr. E. B. Silliman is the proprietor of two of the handsomest rubber stores in the trade, one at Detroit, Mich., the other at Utica, N. Y. Though a young man he has had a long and varied experience, having been for many years with C. M. Clapp & Co. Among other things he manages to find time to oversee the manufacture of quite a line of druggist sundries.

—Mr. Sanders, of Geo. W. Sanders Duck and Rubber Co., paid a visit to New York and Boston, having spent the holidays at Webster Grove, Mass., his former home.

—Mr. Geo. H. Payne is in New York, looking up Southern buyers in the interests of Boyd, Jones & Co., Baltimore, Md.

—Mr. Wm. E. Barker has been in New York showing a new line of tennis shoes for the Pará Rubber Shoe Co., and expects to make fortnightly visits hereafter.

—Mr. E. W. Holt, who has been in the retail trade in Brooklyn, N. Y., for some four years, has lately bought out the store at 278 Grand Street, New York, which, though small, is well located and has a nice trade established.

—McIlroy & Moore, of Portland, Ore., have removed to No. 29 Pine Street, and hereafter will be known as The Portland Rubber Co. Mr. F. B. McIlroy, of this company, has just secured from the city of Seattle, Wash., a contract for 10,000 feet of Paragon brand of fire hose at \$1.10 per foot, the largest order given out at any one time for fire hose in the Northwest.

—W. H. Barnes, of Cleveland, Ohio, who has been representing The Gutta Percha and Rubber M'fg Co. for several years, has connected himself with the New Jersey Car Spring and Rubber Co., and will represent them west of Cleveland as far as Omaha.

—Rochester, Pa., which had such a serious conflagration last month, has organized a fire department, in the competition for the fire hose, the celebrated White Anchor Brand, manufactured by the B. F. Goodrich Co., Akron, Ohio, was landed a winner by Mr. G. R. C. Johnston, their Pittsburg agent.

—We are advised by the New Jersey Rubber Company, Lambertville, N. J., that "it is now expected that water will be in the canal by Feb. 1, at which time we will be ready to start our works."

—The American Oak Leather Co.'s St. Louis branch—under the able management of Mr. J. A. Gardner—has taken the agency of the Gutta Percha and Rubber M'fg Co., and propose to carry a large and complete stock of their mechanical rubber goods. This department will be in charge of Mr. Chas. W. Tooker, who has many years' experience in the rubber trade.

—Mr. Frank Plant, who represents the Goodyear India Rubber Glove Manufacturing Company in Chicago and the Northwest, paid his semi-annual visit to New York recently. Mr. Plant showed the writer a sample of their new featherweight boot, which is of such a light weight that it can be rolled up and put in one's pocket. These goods are packed in cartons and are having a large sale of fine trade.

—The Boston Woven Hose Co. and I. B. Williams & Sons have combined their interests in Chicago and will hereafter sell their goods through the West under the name of the Western Rubber & Belting Co.

—The Colchester was the first company to get into operation after the holiday shut-down, starting in every department on the 1st instant. The heavy weather has brought them a fine array of orders.

—With his grip full of samples, and a bland New Year's smile on his face, C. H. Dale, sales agent of the Peerless Rubber M'fg Co., has started for the great West.

—The Mercer Rubber Co., whose factory is situated at Hamilton Square, some three miles from Trenton, have opened an office in Trenton. It is situated on State Street, in one of the fine residences that of late years have become office buildings.

—The new grinding and calender room of the Home Rubber Co. has an ideal floor of cement, as smooth and hard as granite. In it and in the engine foundation were used 800 barrels of cement.

—Messrs. Warren, Webster & Co., Philadelphia, are advertising a steam economizer which promises to have a run in the rubber trade. It will be fully described next month.

### The Rubber Outlook in Brazil.

REGARDING the new companies forming in Brazil to control the rubber trade of the Amazon, Mr. Francis Grauert, who is popularly supposed to be connected with such an enterprise, said one day last week :

"At present there are two of these companies in Brazil, and both working in Amazon River centres now. One of them has a capital of five millions and the other twenty, both more than half paid up. There seems to be plenty of money in Brazil with which to organize such companies, as there have been very prosperous times in that country. Coffee has gone up from 7 cents to 15, which has drawn a great deal of money there. These two companies are, however, now in competition, and in order to obtain rubber sometimes pay more for it than is necessary. 'Baron' Vianna is connected with the smaller of the two. With the capital that these companies have, they are in a position to freely advance money to the gatherers from the time they leave any of the large rubber centres on the Amazon into the forests, provide for the heavy transportation charges, and carry the crop without any special anxiety until it is marketed.

"Regarding this year's crop, the Rio papers some time ago stated that the season had been a healthy one, and rubber was being freely gathered. This state of affairs seems to have changed, for we gather from our last mail advices that rains began to fall in December, earlier than usual, and that sickness was prevailing among the gatherers on the islands, in consequence of which the collectors had begun to retire. In the wet season malaria is prevalent, which produces chills and fever in a somewhat aggravated form. Our mail advices are confirmed by a cable of the 8th, which states that the weather is bad, receipts were falling off, and that the second half of the crop would be short. We do not believe that present prices are high."

### A Sea Captain's Chat.

"WHEN I left Manaos, on the second of December," said Captain Oliphant of the steamer *Cyril*, "the river had fallen to the lowest of the year, or 45 feet from the highest point. The number of the rubber gatherers that had gone into the forests was much larger than last year, and it was said that there was more caoutchouc coming in than for many years. The river navigation company had 38 steamers on the Amazon, having added three new vessels of between 400 and 500 tons each.

"At Pará rubber was coming in freely, and the season was one of great activity. Senor Sussie, Vianna's new partner had arrived, and the new firm, or company, was full of business.

"The government authorities at Pará had within a few days of my leaving, placed an additional export duty on rubber, all duties being now paid in gold, you are aware. There was much excitement over the elections when we sailed, and it was the general belief among the most intelligent that the Republic would not last. There are too many scattered States, separated by wide expanses of unexplored country,—all of them have widely different interests, and it is difficult to assimilate them."

# COLCHESTER RUBBER CO.

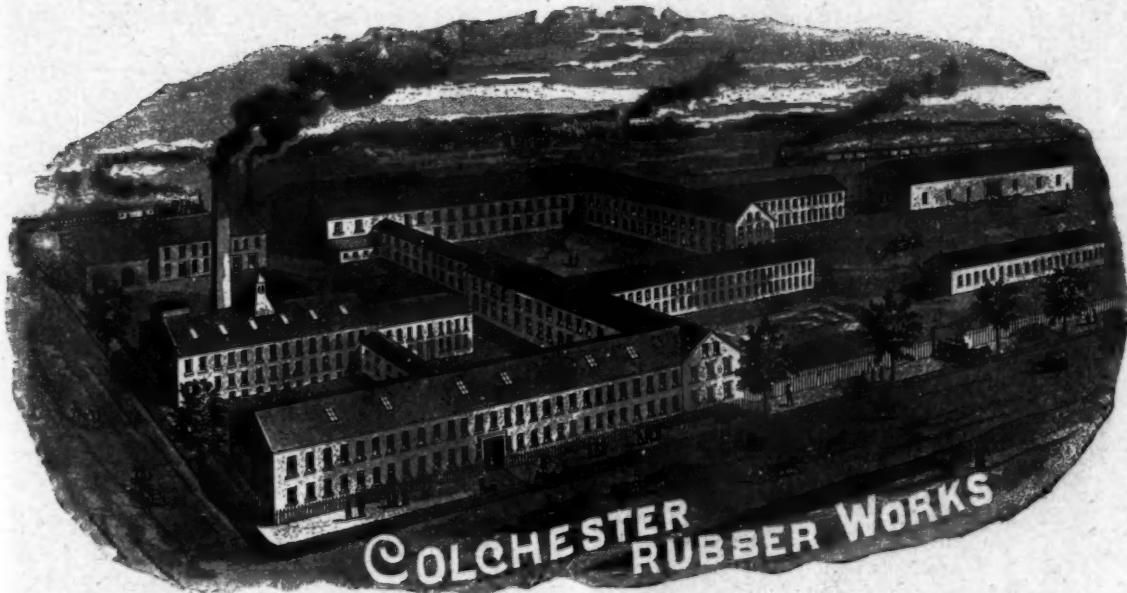
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Warm Lined Overshoes and Gaiters for Cold Climates.

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**NEWEST STYLES. HIGHEST QUALITY.**

AT LOWEST MARKET PRICES FOR FIRST QUALITY GOODS.

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All "COLCHESTER" Shoes are packed, each pair in Separate Cartons, and all have the "ADHESIVE COUNTERS" to prevent slipping off at the heel.

Mention the India Rubber World when you write.

## The Rubber Markets.

NEW YORK, January 14, 1891.

EVENTS have shown the correctness of the views expressed in our last report. The quotations then given, at 69 @ 70 for fine Pará, are to-day at 75 @ 76 in New York, and 2900 for Island and 3100 for Amazon and Pará.

The motive power in this recent advance was supplied by Pará, where an active buying movement was started by Mr. Vianna on his return from Rio, where he had gone for the purpose of getting up a large speculative combination. His sudden activity and mysterious indications of big capital forthcoming evidently frightened exporters who had probably sold ahead, and there was an almost general rush to buy, thus driving prices up rapidly from 2250 to 2900 for Island Fine.

There have been all sorts of rumors afloat as to gigantic combinations of Brazilian capital for cornering the rubber market, but the facts in the case seem to be about these:

The Cia. Mercantil of Pará, which is a native company controlled by the well-known Mr. Vianna, or Baron de Gondariz, has advertised a meeting to be held on the 19th inst. for the purpose of raising its capital to 5000 contos or say \$2,500,000, its present capital being only \$250,000.

Then from Rio comes the report that a new company has been launched by the Banco Emissor for the purpose of dealing in rubber with a capital of 10,000 contos or \$5,000,000. This company is distinct from the corporation to which we referred in our last review, the Empreza Industrial do Norte and Oeste do Brazil, which was started on paper, at least, with a capital of \$10,000,000.

The last cable advices from Rio report a consolidation of the companies, and refer to Vianna as being likely to occupy the position of representative of the combination in Pará. What there may be in all these millions nobody can tell at present, but paper money is manufactured on a grand scale in Rio and paper money will buy rubber at Pará.

If Mr. Vianna should really secure anything like the backing we have just indicated, there is no earthly doubt but that he will make things lively and prove true to his record as a "bull." On this question as to whether he has or will have the backing or not, really hinges the immediate future of the rubber market. The general conditions are probably to-day not favorable to a further advance, at least, for the present; but, the introduction of such an element as the one referred to in these columns, would be sufficient to overrule the laws of trade, certainly for some time. We can only say, therefore, in summing up, that the outlook is very uncertain.

As we go to press a private cable from Pará reports a further advance of 100 reis per kilo. "Prices are now 3000 and 2900 for Island, fine and coarse, the Compania Mercantil buying freely. Receipts this month amount so far to only 525 tons, steamers being delayed up river."

Centrals have been in light supply, with a good demand for Nicaragua grades. Africans are in good supply, with the exception of spun ball and flakes. Assams are very scarce, with a very good demand. Poor Assams are in good supply, however, with a heavy demand. Money is growing in abundance, country banks seeking good paper.

English advices report a strong feeling with a fear expressed in the trade of a corner at Pará. The stocks of Pará December 31, 1890, were 875 tons against 535 tons at the close of 1889, and of all sorts 1935 tons in 1890 against 1595 in 1889. The stocks of African were 360 tons December 31, 1890, against 370 December 31, 1889. Regarding Africans in the English market there appears to be a growing disposition to use them more

and more, the imports into Liverpool of those sorts being 4100 tons in 1890 against 2750 tons in 1889, and consumption has kept more than pace with supplies, while it has not done so with other kinds. During the last three months of the year the advance in Africans caused increased importations which caused a decline to the prices ruling the first of the year, but did not allow an increase of stocks. Africans closed quiet but firm. Pará fluctuated more than Africans, the highest being 4s. 1d in September, declining to 2s. 1d in December and closing at 3s. 3d December 31.

The arrivals of Pará during the past thirty days have been 216,400 lbs. by the *Basil*; 735,600 lbs. by the *Cyril*; 430,000 lbs. by the *Paraense*, and 211,700 lbs. by the *Allianca*, or a total of 1,593,700 lbs.

The amount on passage is as follows: *Justin*, Dec. 31, 190 tons, *Seguranza*, January 5, 90 tons, and the *Ambrose*, January 10, 240 tons, total, 520 tons. The cable between Pará and Maranhão is interrupted, and communication is carried on by land lines, with the usual experience, that the native operators are incapable of transmitting accurately code messages in the English language.

Cables received during the latter part of last week reported the market as very strong, but the weakness in exchange caused an easier feeling naturally. Receipts for the month of December were 2190 of all sorts including Cauchos, against 1780 tons in 1889. Receipts for January have been small. Stocks in first hands are reported as 100 tons, and in second hands 400 tons by a cable received on the 12th. Another cable of the 12th reported prices at 2850 @ 2900 reis for Islands with stocks at 310 tons, a discrepancy in the two cables of about the size of the cargo by the *Ambrose*. The total receipts for the year were 16,430 tons against 15,930 tons in 1889.

No steamers are up to leave Pará until late in the month.

Simpson & Beers report a good demand for prime commercial paper, and furnish the usual monthly statistics for December for New York:

The latest New York quotations are:

Para, fine, new.....	75-76	Tongues.....	45
Para, fine, old.....	53-54	Sierra Leone.....	46-47
Para, coarse, new.....	53-54	Benguela.....	50-52
Para, coarse, old.....	50-51	Congo Ball.....	44-46
Caicho (Peruvian) strip.....	50-51	Small Ball.....	42-45
Caicho (Peruvian) ball.....	56-58	Soft Ball.....	30-32
Mangabeira, sheet.....	46-47	Flake, Lump and Ord.....	30-31
Esmeralda, sausage.....	50-52	Mozambique, red ball.....	
Esmeralda, strip.....	50-51	Mozambique, white ball.....	
Guayaquil, strip.....	43-44	Madagascar, pinky.....	65
Virgin Scrap.....	38-40	Madagascar, black.....	48-50
Carthagena, strip.....	50-51	Borneo.....	34-37
Nicaragua, scrap.....	48-49	Gutta percha, fine grade.....	140@150
Nicaragua, sheet.....	48-49	Gutta percha, medium.....	100
Guatemala, sheet.....	46	Gutta percha, hard white.....	100
Thimbles.....	42-43	Gutta percha, lower sorts.....	60-85

Gutta percha is in light supply and higher prices are asked. The market is dull.

The weather has been of a character to stimulate consumption of rubber goods to the utmost. Almost the entire northern section of the country has been covered with snow, and the fall has extended into the Southern States as far as Knoxville, Tenn. In some sections this has alternated with rain frequently, and the demand for rubber goods has been rarely equal to that of the past month, particularly in boots and shoes.

In clothing there was an excellent holiday demand, mills running night and day to meet the wants of the trade. Prices on spring goods are hardly established, but in some quarters it is maintained that there will be an advance, but a good deal will probably depend upon the price of rubber. Fine goods have been in excellent request, and prices on this class are very firm.

A good trade in belting and packing has sprung up within the past week, large orders coming in from all over the country, and the fire and garden hose demand has opened well.

# The "CLARK" WIRE



INSULATION GUARANTEED WHEREVER USED, AERIAL, UNDERGROUND OR SUBMARINE.

In a letter from the Inspector of the Boston Fire Underwriters' Union, under date of March 29, 1886, he says:—  
"A THOROUGHLY RELIABLE AND DESIRABLE WIRE IN EVERY RESPECT."

THE rubber used in insulating our wires and cables is especially chemically prepared, and is GUARANTEED TO BE WATERPROOF, and WILL NOT DETERIORATE, OXIDIZE OR CRACK, and will remain flexible in extreme cold weather, and is not affected by heat. The insulation is protected from mechanical injury by one or more braids, and the whole slicked with Clark's Patent Compound, which is water, oil, acid, and to a very great extent fire-proof. OUR INSULATION WILL PROVE DURABLE WHEN ALL OTHERS FAIL. We are prepared to furnish Single Wires of all gauges and diameter of Insulation for Telegraph and Electric Lights from stock. Cables made to order. We are now prepared to furnish our Clark Wire with a WHITE OUTSIDE FINISH for ceiling cleat work as well as our standard color.

CLARK JOINT GUM should be used for making water-proof joints. This is put up in half-pound boxes, in strips about one foot long and five-eighths inch wide, and when wrapped about a joints, and pressed firmly makes a solid mass.

FOR RAILWAY AND MOTOR use, we make all sizes of stranded and flexible cables with Clark insulation. Wire Tables and price list will be furnished on application to

HENRY A. CLARK, Treasurer and General Manager.  
HERBERT H. EUSTIS, President and Electrician.

Mention the India Rubber World when you write.

EASTERN ELECTRIC CABLE COMPANY,  
61 to 65 Hampshire Street, Boston, Mass.

## Free Want Department.

WANTED—By a young man of experience, who understands the rubber business, a position as travelling salesman for a first-class rubber house. Have a trade in Indiana. Reference given. Address "T. F. B." INDIA RUBBER WORLD Office.

WANTED—A first-class salesman to sell a line of rubber clothing, gossamer, boots, shoes and oil clothing. Address, RUBBER COMPANY, INDIA RUBBER WORLD OFFICE.

WANTED—First-class salesman to sell rubber clothing and druggists' sundries. Salary and commission or could take them as side line. Experienced-man preferred. Address, RUBBER, INDIA RUBBER WORLD OFFICE.

WANTED—A position by first-class sawyer, as foreman in a rubber, horn or celluloid comb factory. Experience 20 years. Fully understands hammering saws. Has various new ideas in regards to sawing, also competent to run the new improved graining machines. Address to MR. M. PURSELL, 402 East 77th Street, New York City.

WANTED—A position as superintendent in the manufacturing of all descriptions of rubber clothing, macintosh, dull finish and heater goods, or would go in partnership with a gentleman having about \$5,000. I can get a factory with machinery all fixed ready. Address "D. K." INDIA RUBBER WORLD Office.

WANTED—A position as Supt or Foreman by a man forty years of age and 15 years' experience in making Rubber Clothing. Fully understands the business in all its branches. Single and double texture. Can make my own varnish and do my own vulcanizing. Best of references. Address, "MACINTOSH," INDIA RUBBER WORLD.

WANTED—By Eastern manufacturers of rubber belting, hose, packing, etc. a thoroughly competent salesman; one familiar with Western trade and who can furnish best of references. A good salary and permanent position to right party. Address P. O. Box 1239, Boston, Mass.

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HOSE PIPES, COUPLINGS, ETC.

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**LOW PRICES.**

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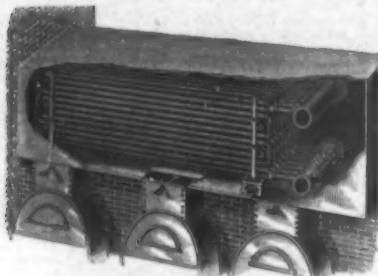


**Victory Lubricators,**  
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and other Specialties pertaining to the Use  
of Steam, Air and Water.

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# THE HUSSEY RE-HEATER

## Steam Plant



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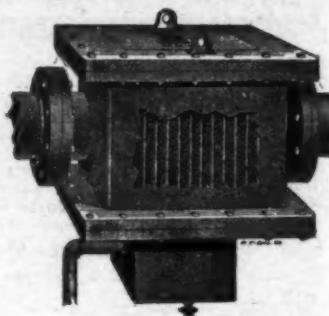
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The Hussey Re-Heater System and other Steam Plant Specialties supplied by this Company, are **SPECIALLY ADAPTED** to Rubber Manufacture. Mention the India Rubber World when you write. Descriptive and Illustrated Circulars sent on application.



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Operates Without Lever or Weights and  
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**NO MORE BAD HOSE.** Being made by machinery, there is no variation. The tube being run like lead pipe, through a die, there is no liability to defects. All other hose is hand-made, and done by piece work, where carelessness is liable to cause defects.

**WHAT DOES IT COST ?** While it costs more to manufacture than in the old way, yet, producing it in the large quantities we do, and desiring to introduce it extensively, we shall offer it at the same price as ordinary hose.

**IT IS THE CHEAPEST HOSE TO BUY,** because it is worth more on merit, because it is an improvement on all others, because it will render longer and better service; and because

**IT IS THE EASIEST HOSE TO SELL,** for it is a new thing, its value can be easily demonstrated; its merits are apparent and readily appreciated, even by the occasional buyer.

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